Version

1.1

Infrared Analysys Software

Nippon Avionics Co., Ltd.

Advanced Package User's Manual

Safety Precautions

Before using the product, read "Safety Precautions" thoroughly to use it properly.

The precautions below are noted so that you can use the product safely and properly and injuries to users and relevant persons and damage to property can be prevented.

⚠ **WARNING**	Indicates that if you ignore this warning when handling the product erroneously, this may lead to a human death or injury.

⚠ **WARNING**
The accompanying CD-ROM must never be played back with a drive not compatible with it.If you use a music CD player to play back this CD-ROM, its loudspeakers may break.In addition, your ears may be injure, if you are using a headphone.

(1) No part of this manual may be reproduced without written permission of Nippon Avionics Co., Ltd.

(2) The contents of this manual are subject to change without prior notice.

(3) Contact Nippon Avionics should you find a questionable portion, error, missing information, or other problems (although we prepared this manual prudentially).

(4) Irrespective of the above, we will not take any responsibility for any charge for a loss, passive damages, or others that may occur for the reason of use of this equipment.

(5) If your copy of the manual contains irregular or miss gathering, we will replace it with a new one free of charge.

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Notes

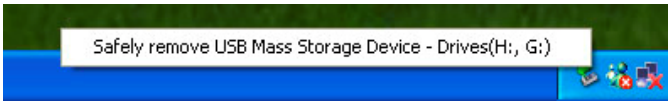
ThermoController does not support range switching. We recommend you to use fixing a range. Please reboot ThermoController, when a range is changed during ThermoController starting.

AdvancedPackage is an application program especially designed for recording thermal images together with thermographic display (temperature distribution display) and for TVS control and file management of the recorded images. Additional thermal image analysis software such as PE-pro and GS-Reporter is required for technical analysis of the recorded images.

The administrative right to Windows is necessary to install the software. Poweruser or a superior right is necessary to use it.

ThermoController does not support standby mode of the PC. Please set off the standby mode of your PC when you record the thermal movie file.

If you connect both TVS and your PC over USB, the two drives (UD-ROM and TVS_USB drives) are recognized even when the TVS power is turned off. Before disconnection of the USB connector, be sure to disconnect the corresponding drive using (Disconnect Hardware in Safe) located in the task tray.



If you are using Windows XP, have the network drive set up on Windows XP and you try to connect TVS-500 through a USB device, the TVS-500 drive may not be recognized. In such a case, please change the network drive, for example, from drive F to drive H.

Software License Agreement

1. Definitions

(1) The licensed software (hereinafter called "the Software") contains the "Advanced Package" computer software built in or included with the TVS-500 equipment, and the printed or electronic manuals and other documents accompanying the software (hereinafter called "accompanying manuals").

2. Licenses

(1) Nippon Avionics (hereinafter called "the Company") will offer you with non-exclusive license of using the Software under the following terms:

① The Software shall be used on the licensed number of computers.
Licensed number of computers: 1

② If the software is read into temporary memory such as RAM, or installed and used in fixed memory such as a hard disk, the use is regarded as requiring the software license specified in this agreement.

3. Right of Reproduction

(1) You can make only one copy of the Software or install the Software onto a hard disk and store the original as the back up only for the purpose of backing up or storing it. In this case, this agreement shall apply to the copy and the Software in the hard disk, which may not be used for any other purposes.

4. License

(1) All the rights concerning the software, excluding those defined explicitly in this agreement, shall be possessed by The Company or the supplier, but shall not be relocate or transferred to you explicitly or implicitly based on this agreement.

(2) You may not modify the contents of the Software or lend, lease, or transfer it.

5. Prohibition of Reverse Engineering

You may not reverse engineer, decompile, or deassemble the Software.

6. Warranty

(1) If a conflict such, as prohibition of use, notice of demand for compensation for losses, or resort to legal action, is raised, arguing that the Software will breach an intellectual property right such as a patent right, utility model right, right of registered design, trademark right, or copyright (hereinafter called "intellectual property right"), The Company will do its best to address and resolve the conflict. If the Company failed in the resolution, or the amount of money required for the resolution will exceed the rational range, the Company will offer an alternative to you, or return the paid amount of money to you.

(2) If a disk or manual accompanying the Software contains a defect, the Company will replace it with a non-defective version free of charge, provided that the elapsed period will be within 1 year after delivery.

(3) The Company does not guarantee that the Software contains any problems, such as errors or bugs. In any of cases including the above two paragraphs, the Company will not take any responsibility for any damage that will be raised due to use or unavailability of the Software, even if occurrence of the damage will have been or be able to predicted.

(4) If the Company will take responsibility for compensation for losses, it will pay to you up to the cost you will have paid for the Software to the Company

7. Cancellation of Agreement

(1) If you breach this agreement, the Company may be cancel part or the whole of the agreement without any prior notice to you. In this case, you shall immediately terminate and return the Software to the Company.

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Chapter

1

INTRODUCTION

Thank you very much for purchasing infrared image transfer tool Avio Advanced Package. Avio Advanced Package enables infrared and visible images to be transferred or controlled easily, and allows files to be managed by connecting it to the infrared thermography TVS-500 through USB interface.

This package consists of three software items:

- ThermoContoroller ..... TVS control tool
- PixCruiser ..... Thermal image file management tool (browser)
- ThermoMovieEditor ..... Moving image playback/edit tool

Software Features

This package features the following:

ThermoController

ThermoController enables the following features by being interfaced with the TVS-500 through USB:

- Displaying and saving infrared images and visible image transfers in real time
- Displaying a mixed image of infrared and visible images
- Controlling TVS-500
- Displaying the point temperatures (5 points)
- Displaying a point temperature graph
- Point temperature alarm
- Sending an email to a mobile phone or similar terminal when an alarm occurs
- Changing the display temperature range, display color, and temperature unit

PixCruiser

- Displaying thermal and visible images in thumbnail form.
- Copying, moving, and deleting a file
- Displaying a daily folder tree
- Customizing association with other software

ThermoMovieEditor

- Playing back or editing the moving image file
- Displaying the point temperature
- Displaying a point temperature graph
- CSV file output of the point temperature
- Batch conversion of still image files (iri, jpeg, and bmp)
- Export of moving image file (AVI file)

Applicable Thermography

This software applies to the following Nippon Avionics Infrared Thermography TVS Series model:

- TVS-500 (USB I/F model)

PC System Configuration

Install AdvancedPackage in a PC satisfying the following requirements:

OS (operating system)

- Microsoft Windows 2000 SP-4 or later
- Microsoft Windows XP SP-2 or later

If you install the accompanying software in the PC, you have to log on to it under the privilege of the administrator.

PC Models

- DOS/V machine. (not applicable to Apple Macintosh machines)
- The machine must have the DOS/V software that is preinstalled, and equipped with the USB 2.0 interface as a standard item.
- CPU Pentium M/1.7 GHz (or equivalent) or greater, or Pentium 4/ 2.6 GHz or greater recommended
- RAM 512 MB or more
- HDD Free space of about 1 GB or more
  7200rpm or grater (in case of Thermal 60fps + Visual Image simultaneously recording)
- Display colors 16-bit color (65,536 colors) or more
- Resource XGA (1024x768) or more

Higher recording frame rates require faster HDD rotation. The table below shows the standard. Lower the frame rate when frame dropping occurs.

HDD rotate speed needed (3.5"HDD)

Image Recording		HDD Rotation speed
Thermal	Visual	
60 fps	1 fps or grater	7200rpm or more
60 fps	Not Record	5400rpm or more
30 fps or less	20 fps or less	5400rpm or more

May not be connectable to any PC that contains an ATI USB Host Controller.

Even if it satisfies the above-mentioned specification, Nippon Avionics does not guarantee that this software operates with all PCs.

When the USB hub was used, or when much USB equipment is connected, transmission speed may become slow or it may not operate normally.

Installing AdvancedPacakge

System Requirements

IMPORTANT - These are the system requirements for proper installation of AdvancedPackage on Windows 2000 or XP:

- You should be an authorized System Administrator because you need to have access to the registry domain that allows only those users who have authority. (This is the requirement for installation. No authority is required for use of the software.)
- Your PC system configuration must be compatible with the *Minimum PC System Configuration* described above.
- Be sure to turn off the power to TVS-500 when you connect it to your PC for the first time. (Refer to the method of "reinstalling the diver" shown from page 20 onwards if you tried to install the diver without turning off the power to TVS-500 and failed in installation.)
- When you install in Japanese version OS, please install from the Japanese folder of the attached installation disk instead of the USB memory of TVS-500 built-in.

How to Install

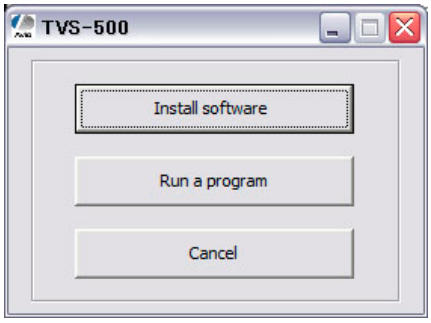
When installing the driver afresh, follow the procedure shown below. We recommend the method shown below although the driver can be installed by some other methods. Refer to "Reinstalling Advanced Package" on page 20 when an old version has been installed or reinstalling the new version.

1 Start up your PC. Log on with the authority of System Administrator. Do not connect TVS-500 as yet.

2 With the TVS-500 power switch OFF, connect it to your PC through a USB cable. Upon connection, the device driver will start to run setup. If the **Restart** message appears after the setup run is over, restart the computer.

Your computer may not restart if its CD drive has been set as the priority starter drive over its HD drive. This happens because TVS-500's built-in memory is recognized by the computer as a CD-ROM. In this case, disconnect the USB cable once or change the priority order of the drives.

3 After a little while (about 30 seconds), the launcher is automatically activated and will appear on the screen as shown on the right. Click the **Install software** button. (If you have restarted the computer with the USB cable connected as is in step 2 above, the launcher is not automatically activated.)



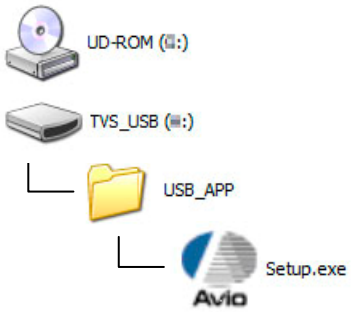
If the launcher is not activated automatically, follow the instructions given in the "When launcher is not activated automatically" box.

Some PCs might have been set up not to allow automatic activation of launchers. Also, pre-installation of CD/DVD writing software or security-related issue could have caused no activation of the launcher.

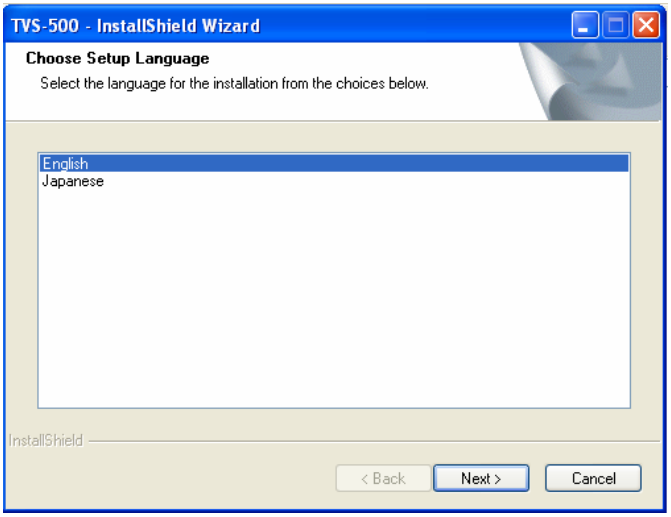
When launcher is not activated automatically:

When TVS-500 is connected to a PC, its internal USB memory is recognized by the computer as two drives: one as CD-ROM drive [UD-ROM], and the other as removal disk drive [TVS_USB].

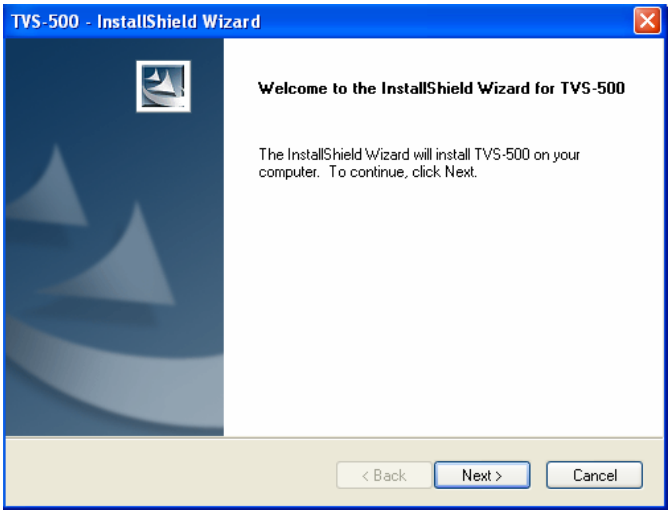
You'll find a "USB_APP" folder inside the removable disk [TVS_USB] recognized as above (located in your PC's My Computer icon). Open the "USB_APP" folder to run the **Setup.exe**.



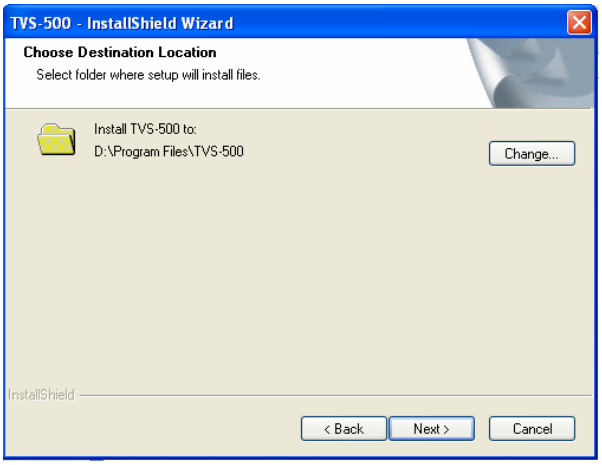
4 The installation window as shown below appears on the screen. After selecting a language and click the **Next>** button. The computer will start setup operation. The language you select here is used for the installation purpose only.



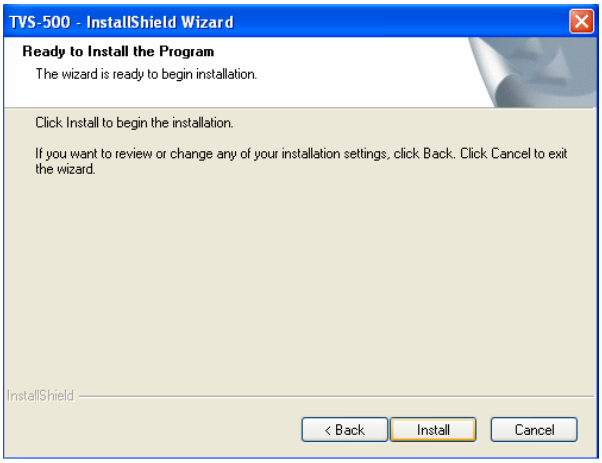
5 When the setup operation is done, the window as shown below will appear. Click the **Next>** button.


TVS-500 - InstallShield Wizard
Welcome to the InstallShield Wizard for TVS-500
The InstallShield Wizard will install TVS-500 on your computer. To continue, click Next.
< Back
Next >
Cancel

6 The **Choose Destination Location** window appears. Select a folder in which you wish to install the file. If the folder displayed is your choice, click the **Next>** button. If you desire to change the folder, click the **Change…** button, specify a desired folder and click the **Next>** button.



7 The **Ready to Install the Program** window appears. Click the **Install** button. Installation will start.

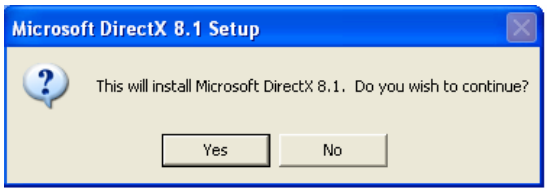

TVS-500 - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

8 When the screen shown below appears, click the **Continue Anyway** button to install the driver for TVS-500.

Hardware Installation
The software you are installing for this hardware:
TVS Camera USB
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

The above screen will appear, because the driver for TVS-500 has not undergone Microsoft's approval test. We have conducted an in-house test and confirmed that there is no problem. Continue your operation without anxiety.

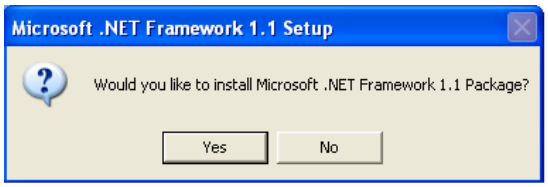
9 The **Microsoft DirectX 8.1 Setup** dialog box opens. When prompted, click **Yes**. Since a license agreement screen etc. is displayed, please set up according to a screen. This setup is not required if you have DirectX 8.1 or later version previously installed in your Windows 2000 or XP-based system. Click **No** to cancel the setup.



10 The **Microsoft .NET Framework 1.1 Setup** (including service packs) dialog box opens. When prompted, click **Yes**, then, since a license agreement screen etc. is displayed, please set up according to a screen.

Installation is necessary even when you have .NET Framework 2.0 installed on your computer.

※ Then, the installation screen of a service pack is displayed. Please install.



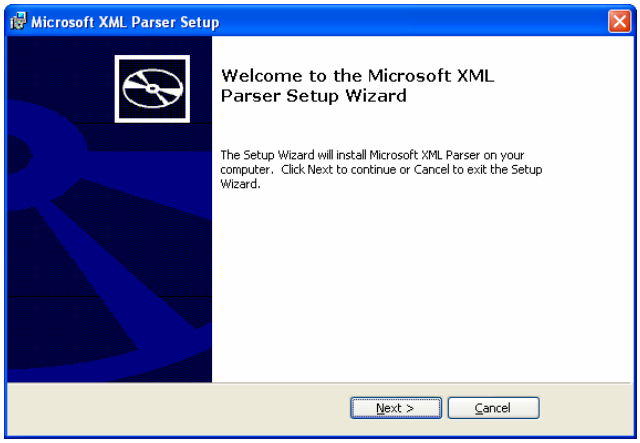
※ When the message of a reboot is displayed, it is not rebooted until all installations finish, although it chooses to reboot.

11 The **Microsoft Windows Media Video 9 VCM Codec Setup** dialog box opens. When prompted, click **Yes**, then, since a license agreement screen etc. is displayed, please set up according to a screen.

Microsoft Windows Media Video 9 VCM Codec Setup
This process will install the Microsoft Windows Media Video 9 VCM codec. Do you wish to continue?
Yes
No

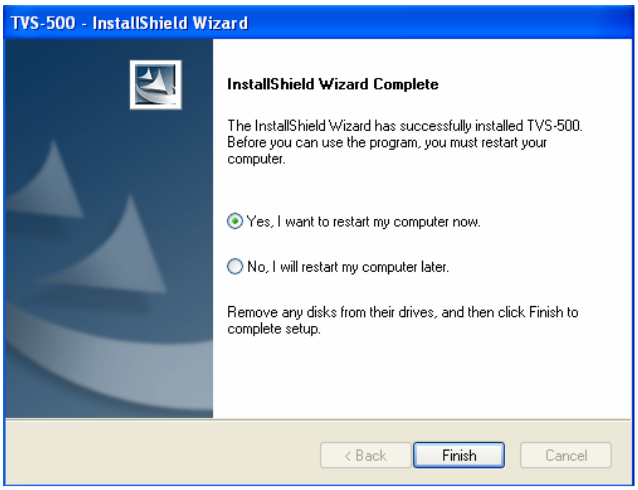
※ When the message of a reboot is displayed, it is not rebooted until all installations finish, although it chooses to reboot.

12 The **Microsoft XML Parser Setup** dialog box opens. When prompted, click **Next>**, then, since a license agreement screen etc. is displayed, please set up according to a screen.

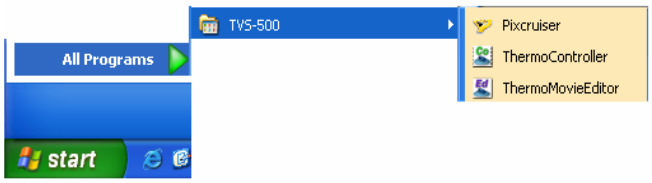

Microsoft XML Parser Setup
Welcome to the Microsoft XML Parser Setup Wizard
The Setup Wizard will install Microsoft XML Parser on your computer. Click Next to continue or Cancel to exit the Setup Wizard.
Next >
Cancel

13 When the following window appears, select **"Yes, I want to restart my computer now."**, click the **Finish** button.

The setup of application software is completion above. Next, Set up the "TVS Camera USB driver".


TVS-500 - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed TVS-500. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

The following three application programs are now registered in the Start Menu.



And the shortcut icons to these programs pop up on the desktop.

Note: When installation is complete, the installation program may prompt you to restart your Windows. If this occurs, restart your computer following the instruction.

14 TVS-500 is turned on the next.

The "TVS Camera USB driver" differs Windows 2000 and Windows XP in the setup method.

(In the case of Windows XP, the following page is followed, and, in the case of Windows2000, page 18 is followed)

In the case of Windows XP

(Refer to Page 18 in the case of Windows2000)

Now turn the TVS-500 power switch on (and connect USB).

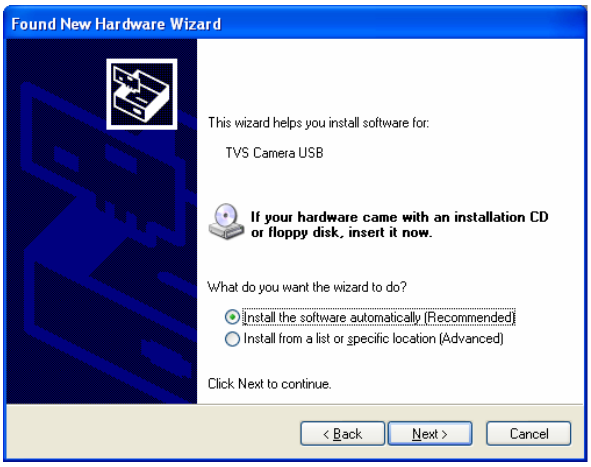
15
Win XP

The **Found New Hardware Wizard** will launch and the following window appears. Select "**No, not this time**." Click **Next>** to proceed with the installation.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

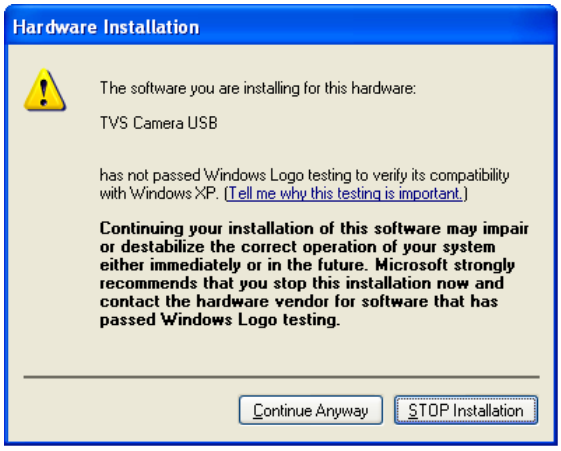
16

Select **Install the software automatically (Recommended)** as shown below, and then click the **Next>** button.


Found New Hardware Wizard
This wizard helps you install software for:
TVS Camera USB
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

17

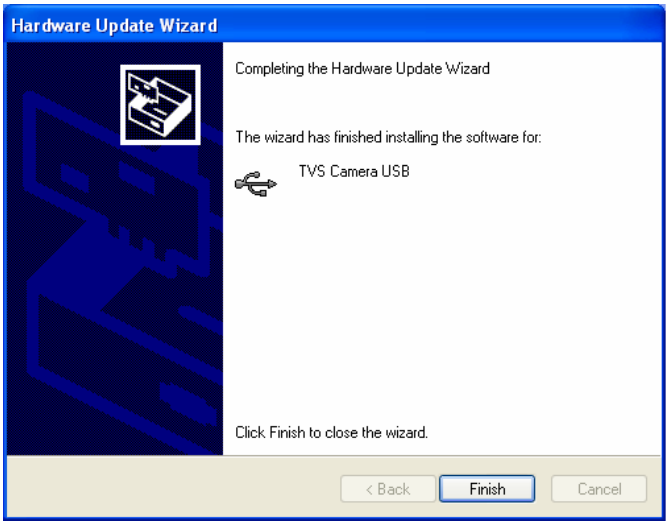
The **Hardware Installation** dialog box as shown below opens. Click the **Continue Anyway** button to proceed with the installation of the device driver for TVS-500.


Hardware Installation
The software you are installing for this hardware:
TVS Camera USB
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

The above screen will appear, because the driver for TVS-500 has not undergone Microsoft's approval test. We have conducted an in-house test and confirmed that there is no problem. Continue your operation without anxiety.

18
Win XP

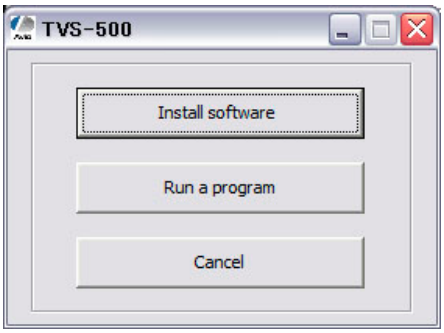
When the **Hardware Update Wizard** window is displayed with a message indicating that the installation was successful. Click **Finish** to complete the installation.



Some PCs require repeated registration of the driver as many times as the number of USB ports.

19
Win XP

To activate the ThermoController, click the **Run a program** button of the launcher (see the illustration on the right), or from the Start Menu, choose All Programs → TVS-500 → ThermoController. Or you may double-click the desktop ThermoController icon.



The ThermoMovieEditor and Pixcruiser can be launched either from the Start Menu or by double-clicking the desktop icon.

In the case of Windows 2000

(Refer to Page 16 in the case of WindowsXP

15 Win

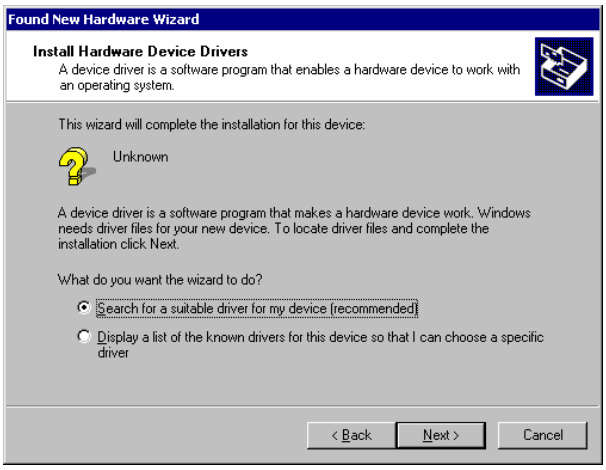
Now turn the TVS-500 power switch on (and connect USB).

Welcome to the Found New Hardware Wizard will launch and the following window appears. Click **Next>** to proceed with the installation.TVS-500

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install a device driver for a hardware device.
To continue, click Next.
< Back
Next >
Cancel

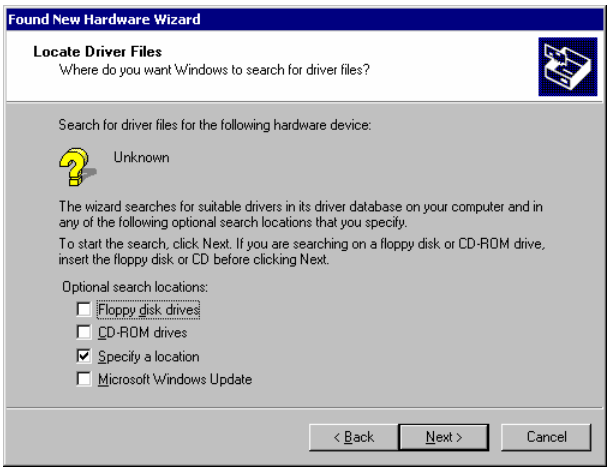
16 Win

Select **Search for a suitable driver for my device (Recommended)** as shown below, and then click the **Next>** button.


Found New Hardware Wizard
Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
Unknown
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back
Next >
Cancel

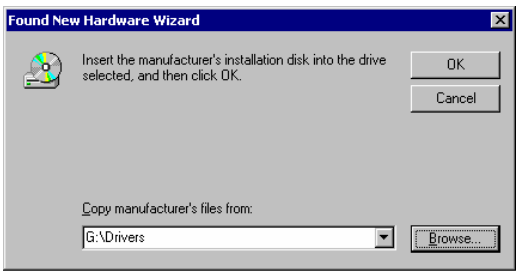
17 Win

If **Locate Driver Files** screen is displayed, after attaching a check mark for **Specifying a Location**, the **Next>** button will be pushed.


Found New Hardware Wizard
Locate Driver Files
Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
Unknown
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back
Next >
Cancel

18 Win

On the following screen Push the **Browse…** button and specify a driver file. The driver file is TVS_USB. Specify the Drivers folder of a drive. (The following screen is TVS_USB. It is the case where a drive is an G: drive) Then push **O.K** button.



19 Win

On the following **Driver Files Search Results** screen, push the **Next>** button.

Found New Hardware Wizard
Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Unknown
Windows found a driver for this device. To install the driver Windows found, click Next.
g:\drivers\tvsusb.inf
< Back
Next >
Cancel

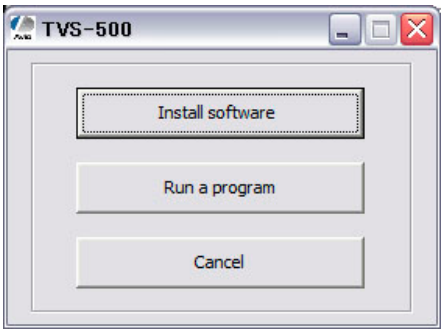
20 Win

When **Completing the Found NewHardware Wizard** screen is displayed, Push **Finish** button and it is an installation end.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
TVS Camera USB
Windows has finished installing the software for this device.
To close this wizard, click Finish.
< Back
Finish
Cancel

21 Win

To activate the ThermoController, click the **Run a program** button of the launcher (see the illustration on the right), or from the Start Menu, choose All Programs → TVS-500 → ThermoController. Or you may double-click the desktop ThermoController icon.



The ThermoMovieEditor and Pixcruiser can be launched either from the Start Menu or by double-clicking the desktop icon.

Uninstalling AdvancedPacakge

After opening the Add or Remove Programs tool in the Control Panel icon, select "TVS-500" from the list of currently installed programs and then click on the **Remove** button. Follow the instructions on the screen to complete removing the program.

The middleware will not be uninstalled by the above operation. Uninstall it individually.

Reinstalling AdvancedPacakge

Click the "Install software" button of the program launcher, and the installer will be activated. Click the **CHANGE** button to start installation. This method permits installation of ThermoController, ThermoMovieEditor, Pixcruiser, and TVS Camera USB driver. The middleware is not installed.

When installing all the programs, uninstall all the programs and then click the **Install software** button of the launcher.

Application Programs to Be Installed

This installer is used to install the following software:

- Microsoft .NET Framework 1.1
- Microsoft .NET Framework 1.1 Service Packs
- Microsoft Windows Media Video 9 VCM
- Microsoft Direct X 8.1
- Microsoft XML Server Setup
- AdvancedPackage ThermoController
- AdvancedPackage ThermoMovieEditor
- AdvancedPackage Pixcruiser
- TVS Camera IUSB Driver

The USB driver is saved in the Drivers folder of the TVS_USB drive.

The installer for AdvancedPackage is the Setup.exe located in the Setup folder inside the AVIO_APP folder of the TVS_USB drive.

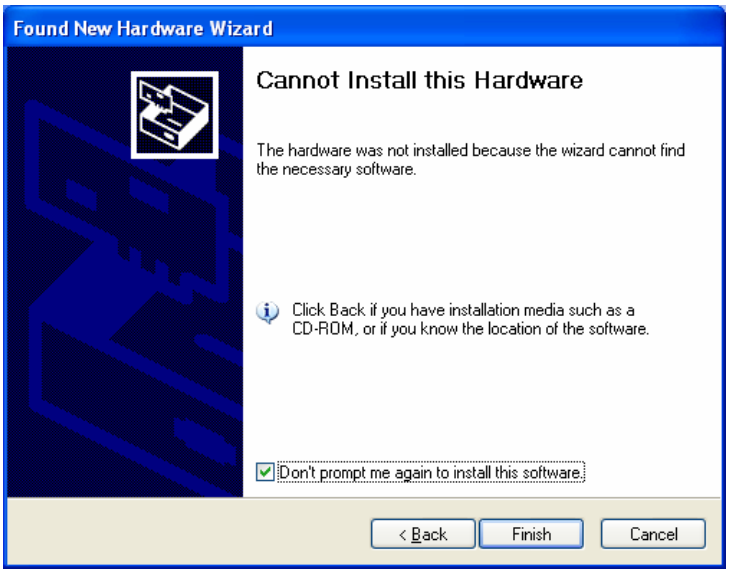
About an installation disk

Two installers, Japanese (JP) and English (EN), are contained in the installation disk. The Japanese version installer is saved in the USB memory in TVS-500, and the English-language edition installer is saved beforehand at it of TVS-500E.

When the data in the USB memory of TVS-500 is deleted accidentally, please copy all folders and files in EN folder in an installation disk, or JP folder to the "TVS_USB" drive (in USB memory of TVS-500) using Windows Explorer etc.

About Reinstallation of Driver

Turn on the power to TVS-500 to connect it before installing AdvancePackage, and the **Found New Hardware** dialog box will appear. If the operation is continued according to the Wizard, the device driver will not be installed correctly (when the window shown below appears).


Found New Hardware Wizard
Cannot Install this Hardware
The hardware was not installed because the wizard cannot find the necessary software.
Click Back if you have installation media such as a CD-ROM, or if you know the location of the software.
Don't prompt me again to install this software.
< Back
Finish
Cancel

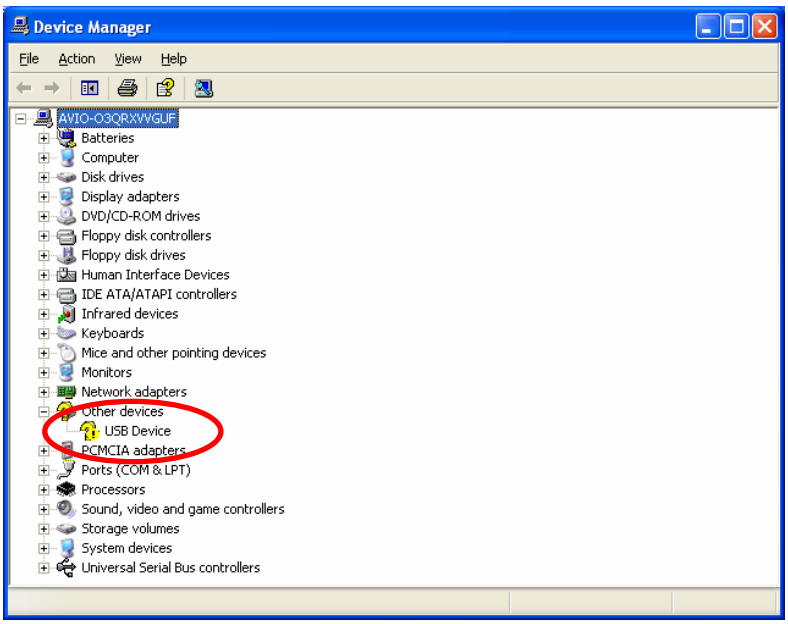
The corrective measures to take when the device driver is not installed correctly, including the case shown above, are shown below.

(* Some personal computers equipped with ATI's chip set may not operate normally even if the driver is installed correctly.)

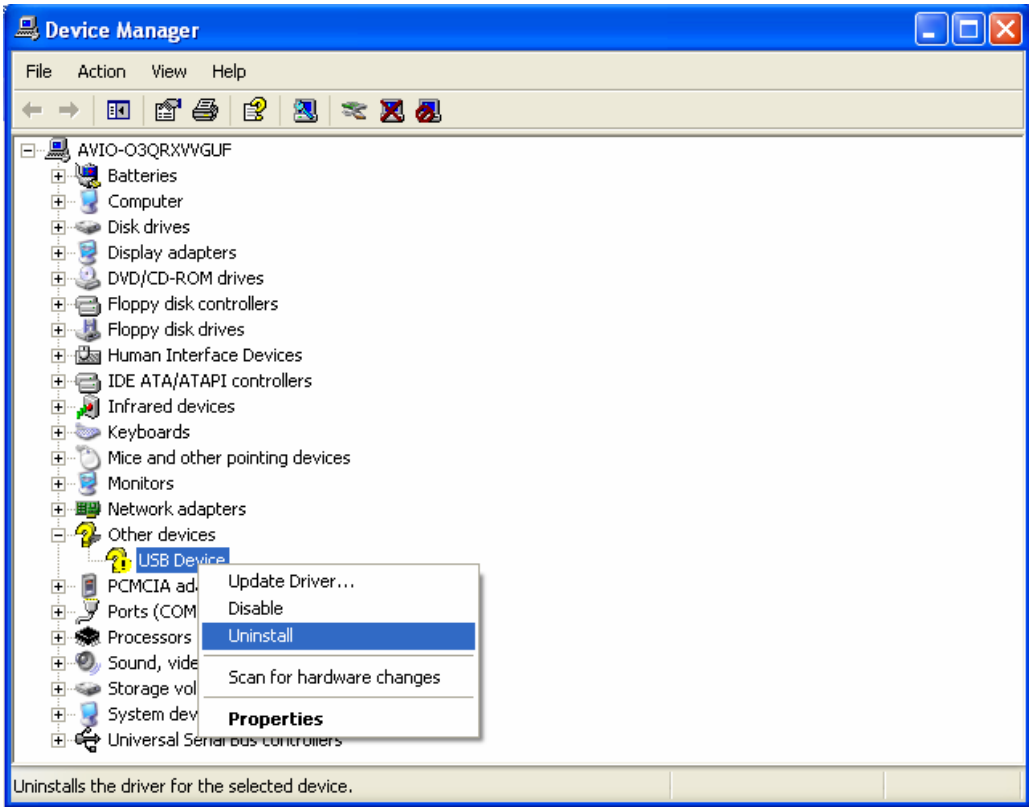
[Procedure]

1. Install AdvancedPackage completely.
2. Turn on the power to TVS-500 and open the device manager.

   (Right-click My Computer and select **Property**. Click the **Hardware** tab and click **Device Manager**.



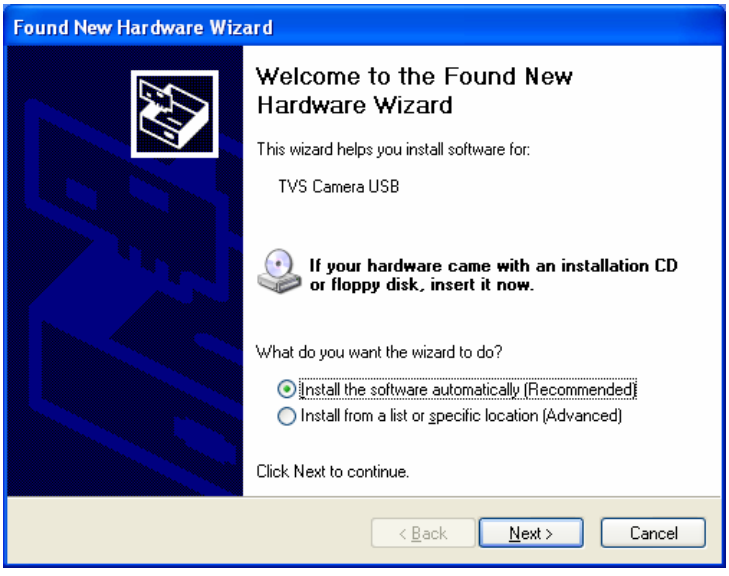
3. There should be **Unknown USB device**. Select and delete it.



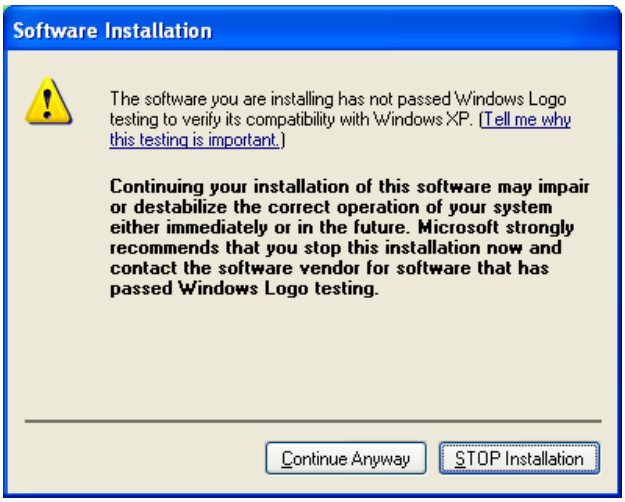
4. Turn off the power to TVS-500 once and then turn it on again.

5. **Found New Hardware Wizard** will appear. Select and execute **Automatic detection**.

6. Check **Automatically install software** and click **Next>**.

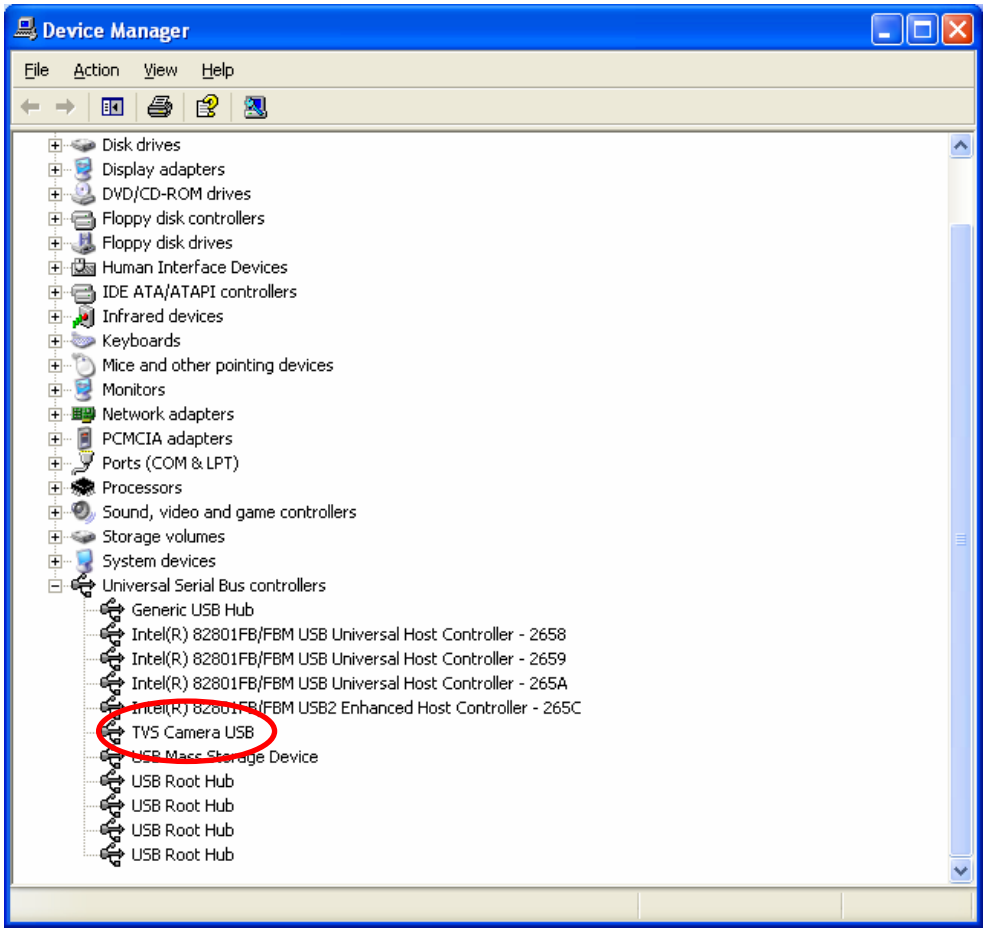

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
TVS Camera USB
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

7. Click **Continue** on the **Hardware Installation** window.


Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

The driver has been installed correctly when the TVSUSB device is included in the USB device group of the device manager.

〈Normal screen of device manager〉



Chapter

2

Instruction of ThermoController

Basics of Use

1. Start the TVS and PC.
   Fix the range of TVS to L or H according to a measurement thing.
2. After ThermoController has started, connect the TVS and USB using the USB cable.
3. The launcher starts automatically.
4. If you are making the connection to your PC first, press the **Install Software** button to install AdvancedPackage first. (For the installation procedure, see the INTRODUCTION on page 8.)
5. If the software has already been installed, press the **Run a Program** button to start the software. If the software does not start automatically, select TVS-500→**ThermoController** in the Windows **Start** menu.
6. The Initial Window (detailed later) appears.

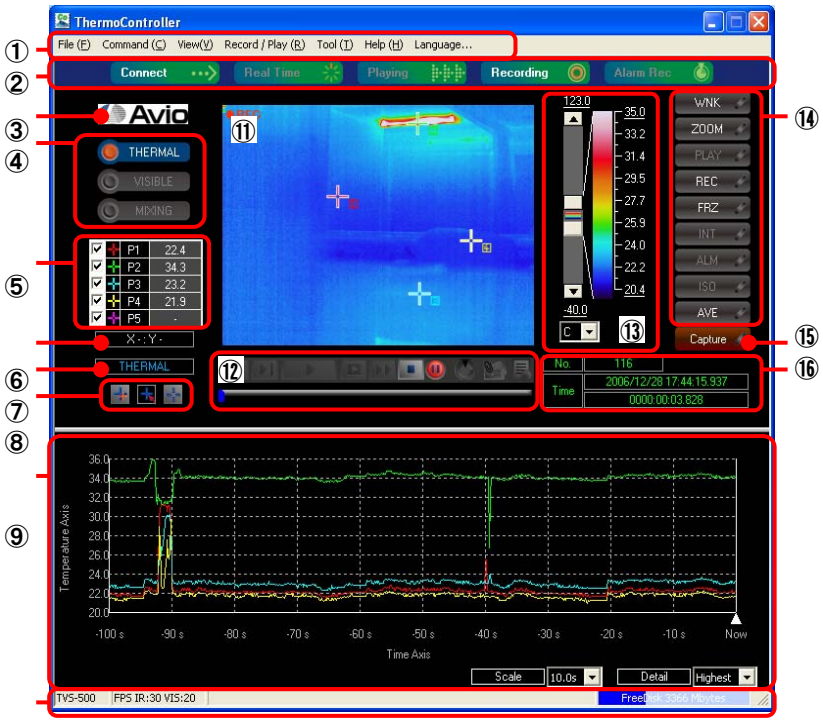
The software may not start automatically, depending on the environment of your PC. If it does not start, contact the system administrator.

If you connect TVS and PC through USB interface, the drive system is recognized as consisting of two drives even if power to the TVS is off. Before removing the connection, remove the appropriate drive according to the instructions in "Removing the Hardware Safely".

The file containing moving images recorded are temporarily saved in the folder that was specified in the **Working Directory** common tab (**Tool**→ **Environment Settings**).

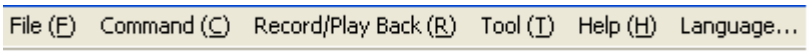
ThermoController does not support range switching. We recommend you to use fixing a range. Please reboot ThermoController, when a range is changed during ThermoController starting.

Initial Screen



(1)	Main Menu Bar	Allows you to set up the language, environment, and others.
(2)	Operation Status Bar	Shows the status by animation.
(3)	TVS Menu	Allows various TVS settings.
(4)	Image Switching Button	Switches between the thermal, visible, mixing images.
(5)	Point Temperature Display	Displays up to five point temperatures.
(6)	Cursor Coordinates Display	Shows the coordinates of the cursor.
(7)	Recording Mode	Shows the current recording mode. It is recorded in the mode currently displayed here next time. You can switch the mode by double-clicking here.
(8)	Point Edit button	Adds, moves, or deletes a measurement point.
(9)	Graph Display Area	Shows the point temperature graph.
(10)	Status Bar	Shows the applicable model, the current image transfer speed, the status/error, and the remaining amount of hard disk.
(11)	Image Display Area	Image display area
(12)	Movie Playback/ Recording Controller	Plays back or records moving images.
(13)	Temperature Display Controller	Sets the display temperature range. Also changes the color palette.
(14)	TVS Control	Performs the same function as the TVS function button.
(15)	PC One-Shot Recording Button	When you press this button, the current image is recorded in the form of a static image in the specified folder.
(16)	Recording Playback Information	Shows the number of frames, the current time, and the elapsed time during recording/playback.

1. Menu Bar



File(F)

- Save Recording File .....Saves the recorded file.
- Save in CSV Format.....Saves the point temperature trend as a CSV file.
- Exit Application .....Exits ThermoController.

Command(C)

- Connect .....Initiates connection to the TVS through USB interface. Usually connected automatically when ThermoController starts.

View (V)

- Graph Display (G).....Turns ON/OFF the graph display.

Record/Play Back(R)

- Play back .....Plays back the last moving image recorded after the start.
- Normal Recording.....Starts normal recording.
- Alarm Recording.....Starts alarm recording.
- Stop .....Stops playback/recording. Also switches the TVS to its live image.
- Next Frame.....Plays back the next frame during PAUSE.
- Previous Frame .....Plays back the previous frame during PAUSE.
- Fast Forward/ Slow Playback ….. Plays back images at a speed of 1/60 to 60 times.
- Recording Setting Screen .....Sets the frame rate for recording. Select a rate, and the setting screen will appear. For details, refer to page 40
  - For the high speed mode, specify the number of frames per second.
  - For the low speed mode, specify the time interval recorded, in 1 s increments, from 0 h, 0 min, 1 s to 24h, 59 min, 59 s.

Tool(T)

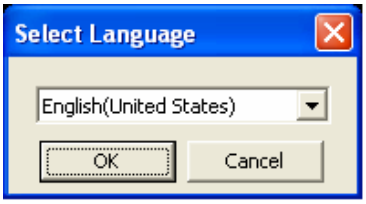
- Option.. .....Opens the option settings window. For details, see the **Options Window** section on page 34.

Help(H)

- Version .. ..Shows version information.

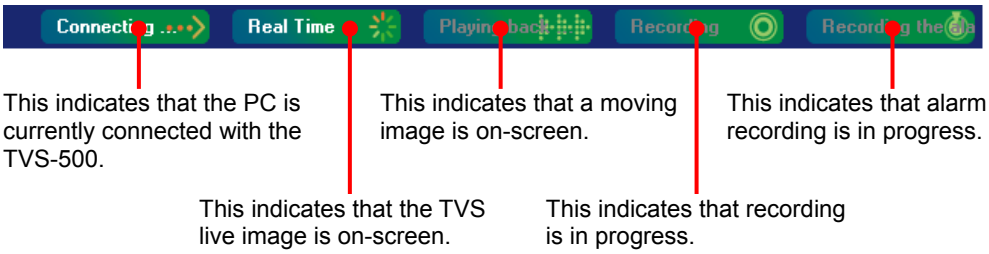
Language ..

- Opens the language selection window. You can choose between Japanese and English. After you have changed the setting, you have to restart ThermoController.



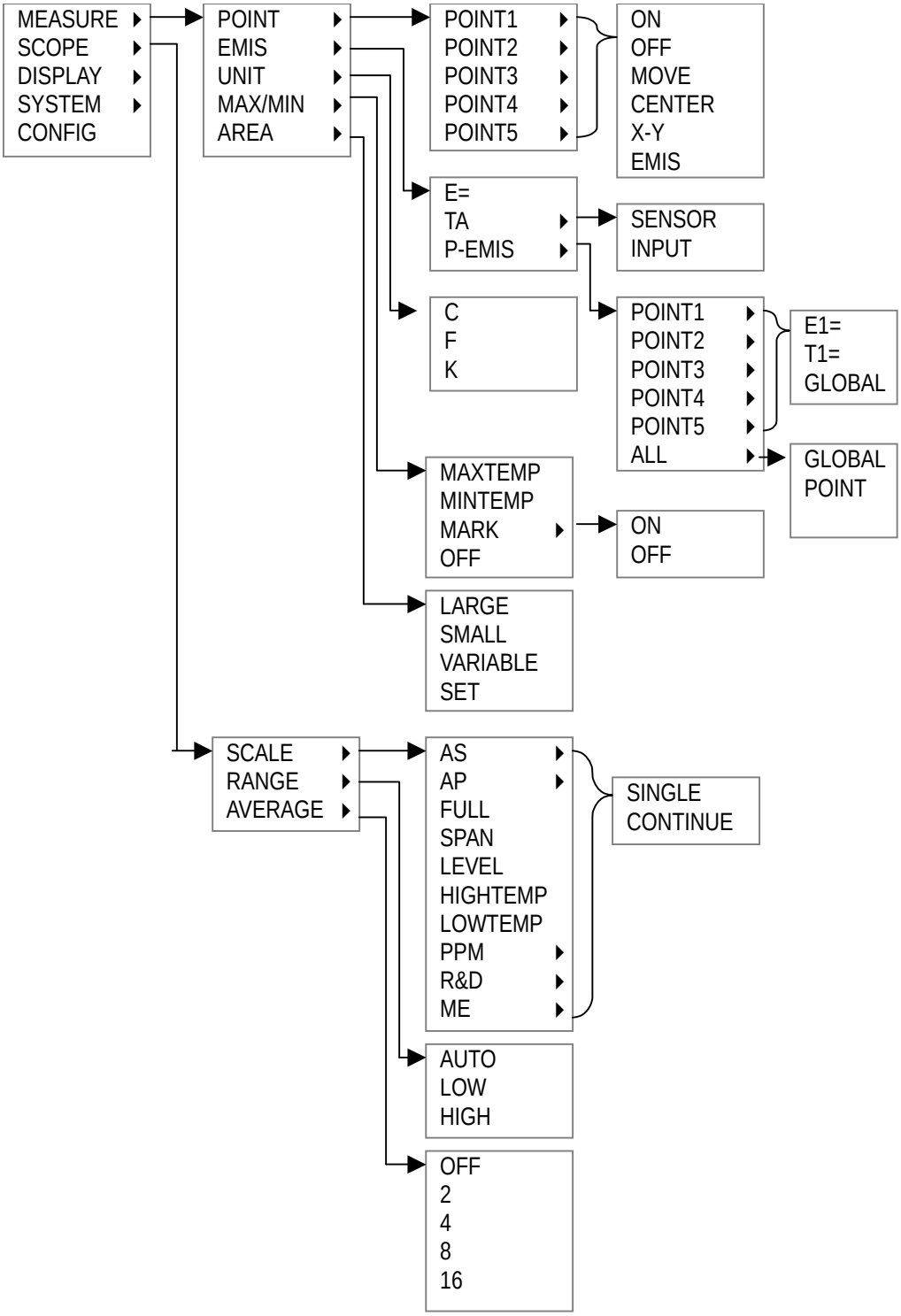
2. Operation Status Bar

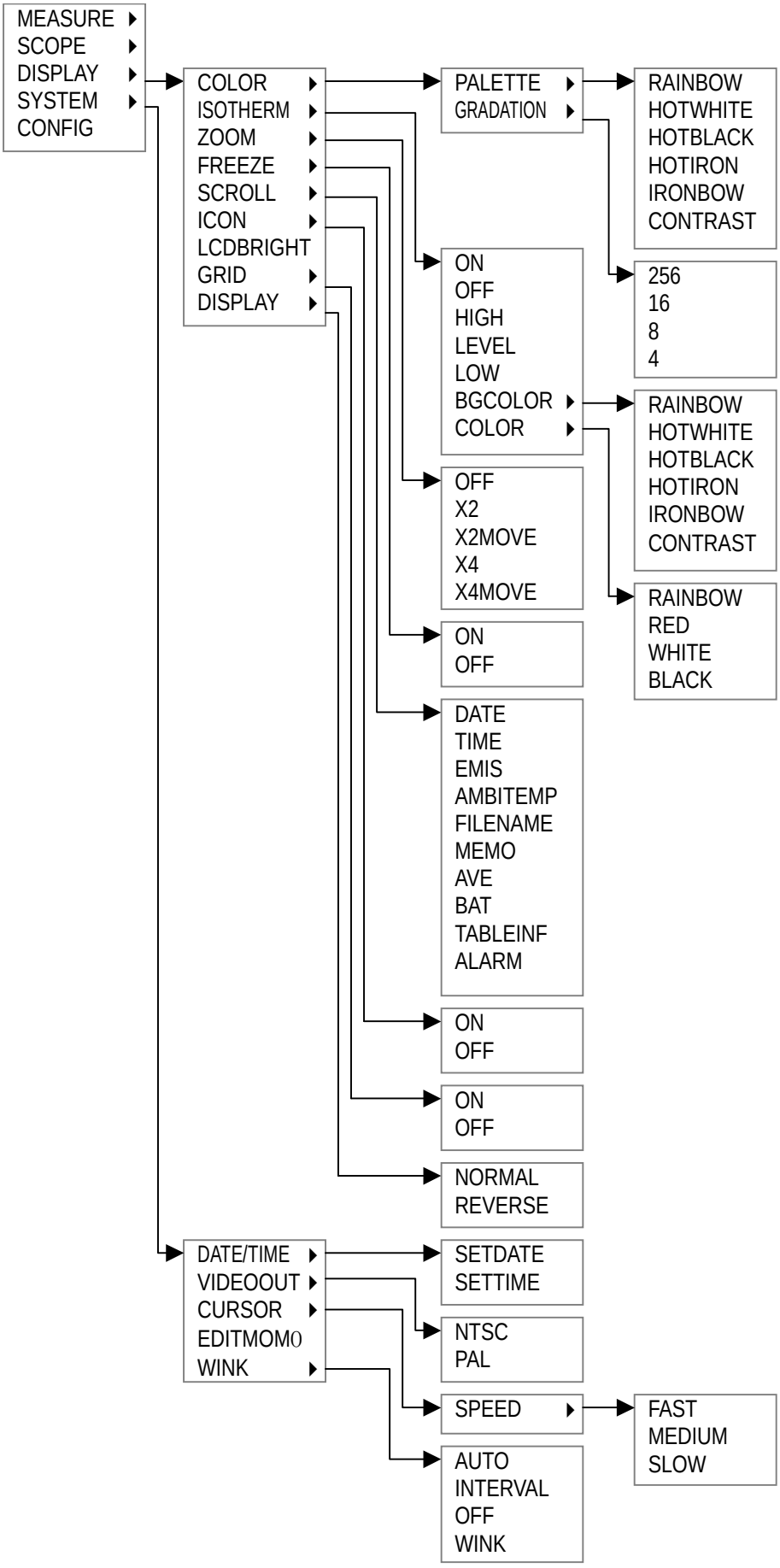
The Operation Status Bar shows the status by animation.


Real Time
This indicates that the PC is currently connected with the TVS-500.
This indicates that the TVS live image is on-screen.
This indicates that a moving image is on-screen.
This indicates that recording is in progress.
This indicates that alarm recording is in progress.

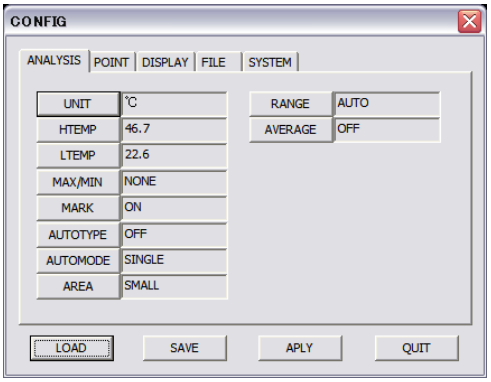
3. TVS Menu

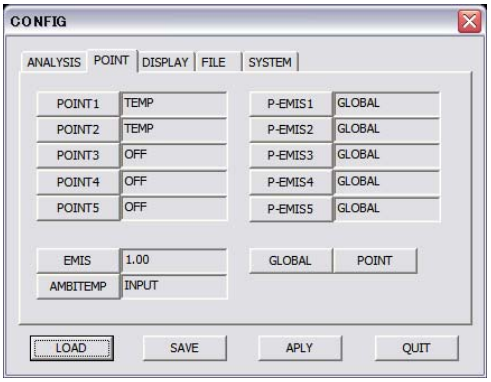
The operation is the same as that for the Avio logo menu of TVS. (Refer to the menu system shown below.) Refer to the Instruction Manual for the TVS for the detailed usage.

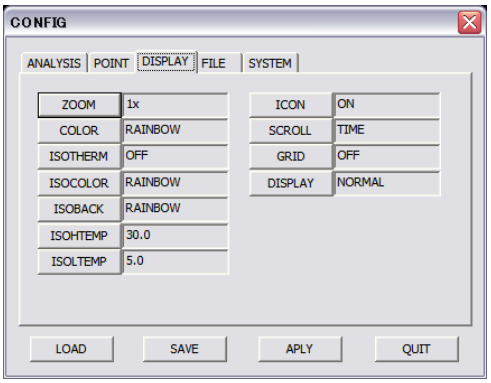


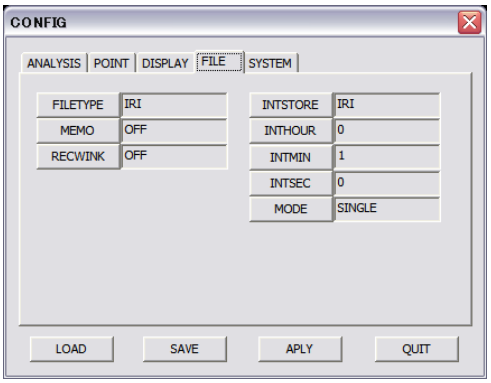

MEASURE
SCOPE
DISPLAY
SYSTEM
CONFIG
COLOR
ISOTHERM
ZOOM
FREEZE
SCROLL
ICON
LCDBRIGHT
GRID
DISPLAY
PALETTE
GRADATION
RAINBOW
HOTWHITE
HOTBLACK
HOTIRON
IRONBOW
CONTRAST
256
16
8
4
ON
OFF
HIGH
LEVEL
LOW
BGCOLOR
COLOR
RAINBOW
HOTWHITE
HOTBLACK
HOTIRON
IRONBOW
CONTRAST
RAINBOW
RED
WHITE
BLACK
OFF
X2
X2MOVE
X4
X4MOVE
ON
OFF
DATE
TIME
EMIS
AMBITEMP
FILENAME
MEMO
AVE
BAT
TABLEINF
ALARM
ON
OFF
ON
OFF
NORMAL
REVERSE
DATE/TIME
VIDEOOUT
CURSOR
EDITMOM0
WINK
SETDATE
SETTIME
NTSC
PAL
SPEED
FAST
MEDIUM
SLOW
AUTO
INTERVAL
OFF
WINK

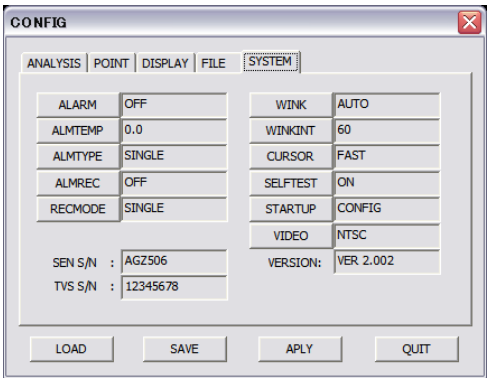
CONFIG menu











Look at the TVS screen when operating the TVS menu.

4. Image Choosing Button

Pressing this button switches between the thermal, visible, mixing images. If a moving image displaying only thermal images is being played back, the thermal image button is only displayed.

·····Thermal image is displayed

·····Visible image is displayed.

·····Mixing image is displayed.

5. Point Temperature Display

This software can display up to five point temperatures .

6. Cursor Coordinates Display

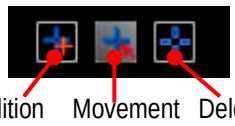
This shows the coordinates of the cursor. X: 0 to 319, Y: 0 to 239

7. Recording Mode

This shows the current recording mode. You can switch the mode by double-clicking here.

8. Point Edit Button

Used to add, move, or delete the measurement point. Press this button before specifying the point.

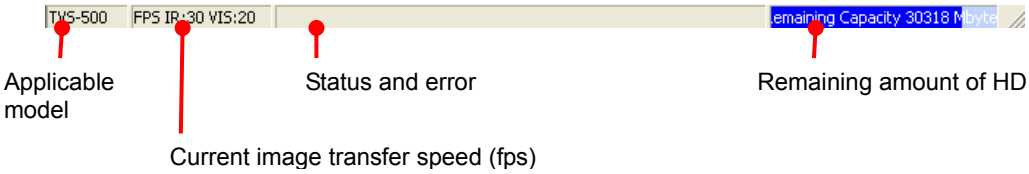


9. Graph Display Area

The trend graph of the point temperature is displayed in this area

10. Status Bar

Shows various related information items.



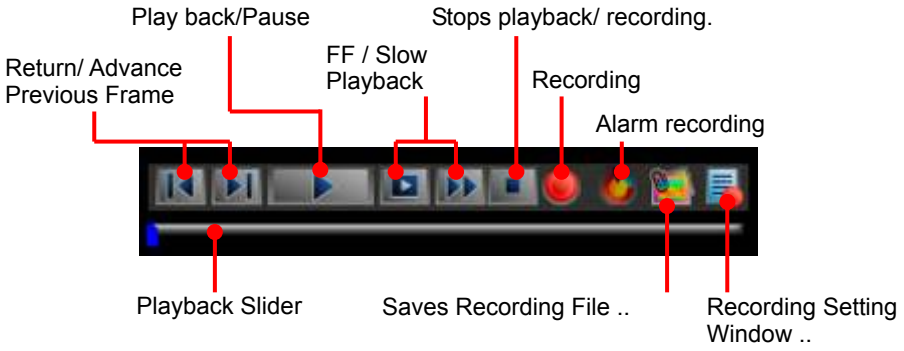
(Note: The background turns yellow when there are some frames that could not be received.)

11. Image Display Area

This shows operation information including PLAY, REC, and PAUSE in Image Display Area.

12. Movie Playback/Recording Controller

Plays back or records the movie.

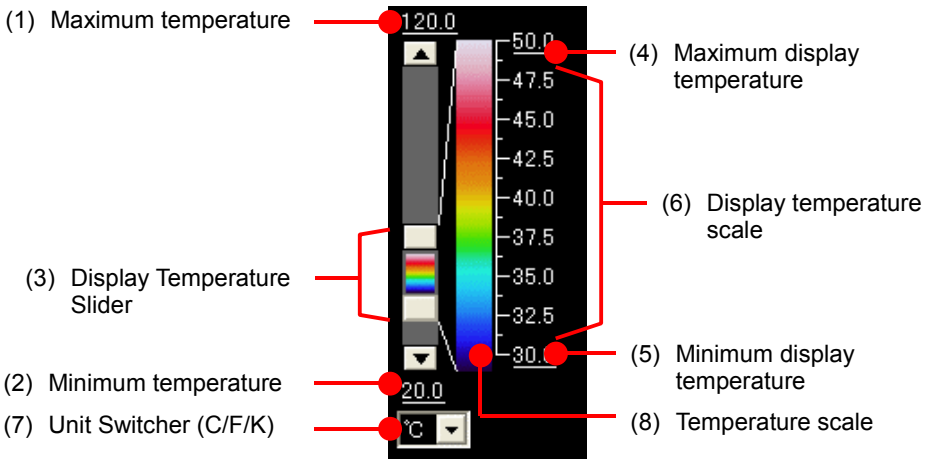


Save Recording File.. ..... Pressing this button displays the save window. Specify the folder to save. Then, specify the file name. The moving image file is saved under a name with extension **.IRM**.

Recording Setting Window... ..... Allows you to set up the recording conditions. For details, see the Recording Settings on page 40.

13. Temperature Display Controller

Sets the display temperature range. You can change the color palette.



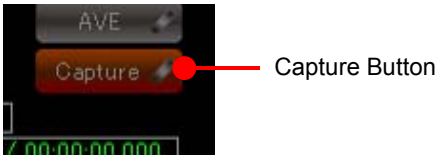
(1), (2) Maximum/minimum temperatures	Double-clicking the numeric field allows you to change it by typing the new value from the keyboard.
(3) Display temperature slider	Dragging the slider allows you to change the display temperature (4), (5), (6). By dragging the color bar section of the slider, you can slide the display temperature range with the display temperature width unchanged. You can also change the maximum (4) or minimum display temperature (5) by dragging the upper and lower button on the color bar.
(4), (5) Maximum or minimum display temperature	Double-clicking the numeric field allows you to change it by typing the new value from the keyboard.
(6) Display temperature scale	Displays the scale automatically with the minimum to maximum display temperature range divided into eight segments
(7) Unit Switcher	Allows you to switch the temperature unit between C, F, and K.

14. TVS Controls

These controls are used to perform the same function as the TVS function button. For details, refer to the TVS instruction manual.

15. Capture Button

The image when this button is touched is recorded as a still image in the specified folder. Select TOOL (T), OPTION (O), and Capture on the common setting tab to specify the folder. When no folder is specified, an error message will appear.



16. Recording Playback Information Display

Shows the number of frames, the current time, and the elapsed time during recording/playback.

Environment Settings Window

Options Window

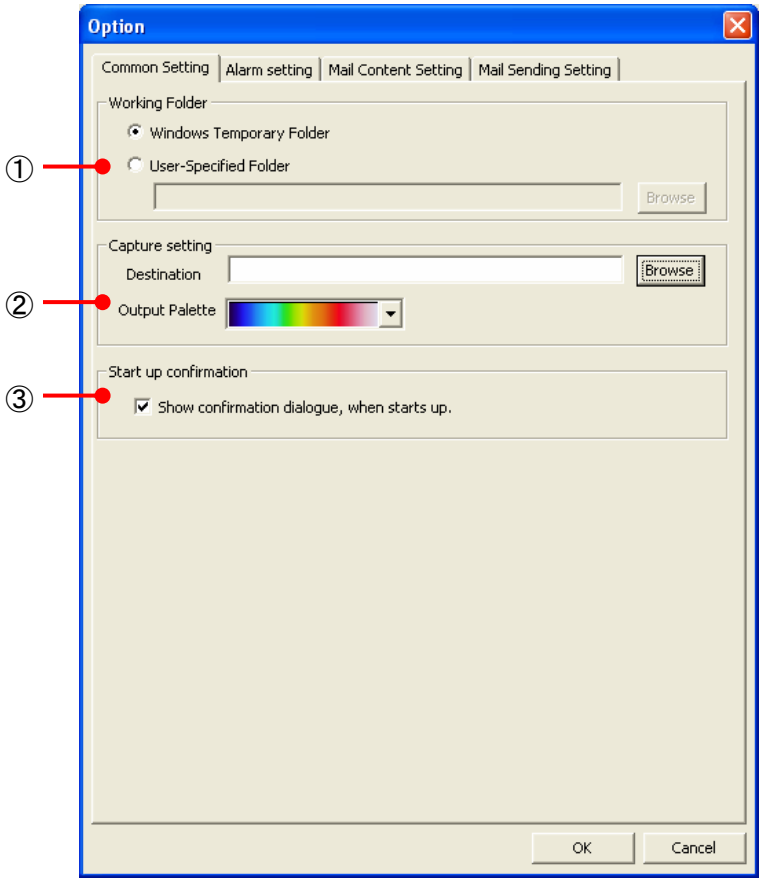
Select **Tool**→ **Options (O)...** to open the **Option Settings** window, detailed later.

Common Settings tab

(1) Working Directory ····· Specify the working folder that is used by ThermoController. The Windows temporary folder is usually "%USERPROFILE%¥Local Settings¥Temp".

(2) Capture ····· Specify the folder and palette in which to save the image data with the ThermoController PC REC button. If you do not have any folder or palette, an error message will appear.

(3) Confirmation during starting ····· Allows you to select whether or not to display the message dialog that recommend to fix the range switching during startup.



Alarm Setting Tab

(1) Condition of Combination ····· Set either AND or OR for the condition of each point.

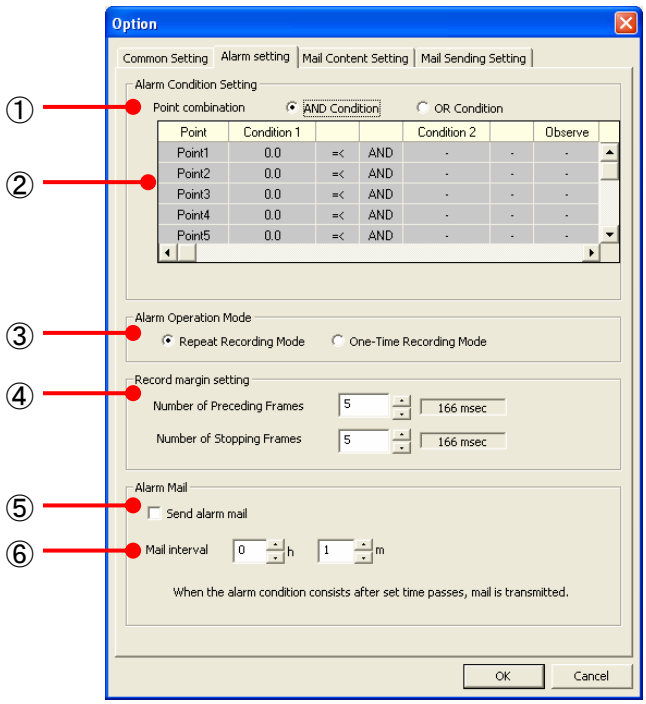
(2) Point Condition ····· Set the condition of each point. The following setting is possible for each point. The details are explained on the next page.

(3) Alarm Recording Mode ····· Specify the repeat recording mode or one-time recording mode.
Repeat recording mode: Images are recorded without limit whenever the alarm condition is met.
One-time recording mode: Images are recorded only during the initial period when the alarm condition is met.

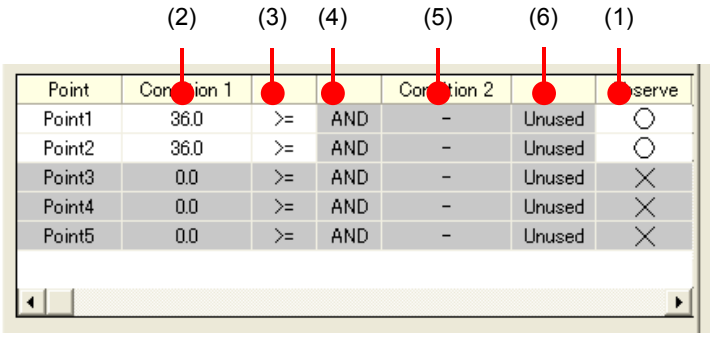
(4) Before-After Recording Setting ····· Specify the number of preceding recorded frames and the number of stopping frames during recording.
Number of preceding recorded frames: Set the number of preceding recorded frames that exist before the alarm condition is met.
Number of stopping frames during recording: Set the number of recording frames that exist after the alarm condition is not met.

(5) Transmitting Alarm Mail ····· Check this to send an alarm mail.

(6) Transmission Standby Time ····· Set the time during which no alarm is considered to be given even if the alarm condition is met.



Point Conditions



(1) Observe..... Specify whether the point should be enabled or disabled. First, enable (○) points required to output an alarm.

(2), (3) Condition 1..... In the (3) field, set "Not used," "Greater than or equal to," or "Less than or equal to." If you specify "Not used," "-" will be displayed in the "Condition" field, which will disable you to set the temperature. In the (2) field, set the condition temperature.

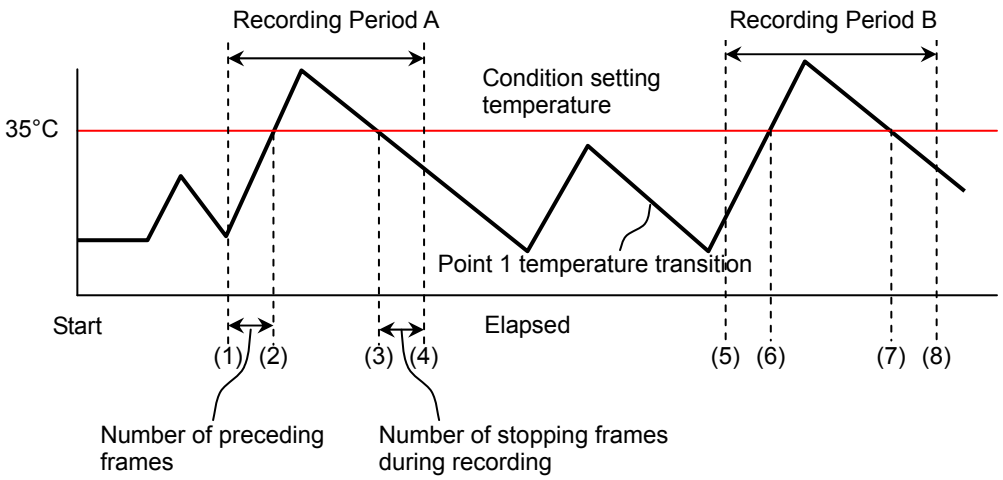
(4) AND/OR..... Specify AND or OR for Condition 1 and Condition 2 for each point.

(5), (6) Condition 2..... Same as (2) and (3)

Indicates Enabled/Disabled by the color of the background. White indicates Enabled, and gray Disabled.

Example: Alarm recording was set at 35°C for Point 1, and the temperature transition took place at Point 1.

- In the One-Time Recording Mode, the frames are recorded for the first period satisfying the alarm condition. In the figure below, the frames are thus recorded only for Recording Period A.
- In the Repeat Recording Mode, the frames are recorded for all the periods satisfying the alarm condition. In the figure below, the frames are thus recorded for Recording Periods A and B.
- In the figure below, the number of preceding recorded frames is obtained from the (1) to (2) and (5) to (6) periods.
- The number of stopping frames during recording is obtained from the (3) to (4) and (7) to (8) periods.



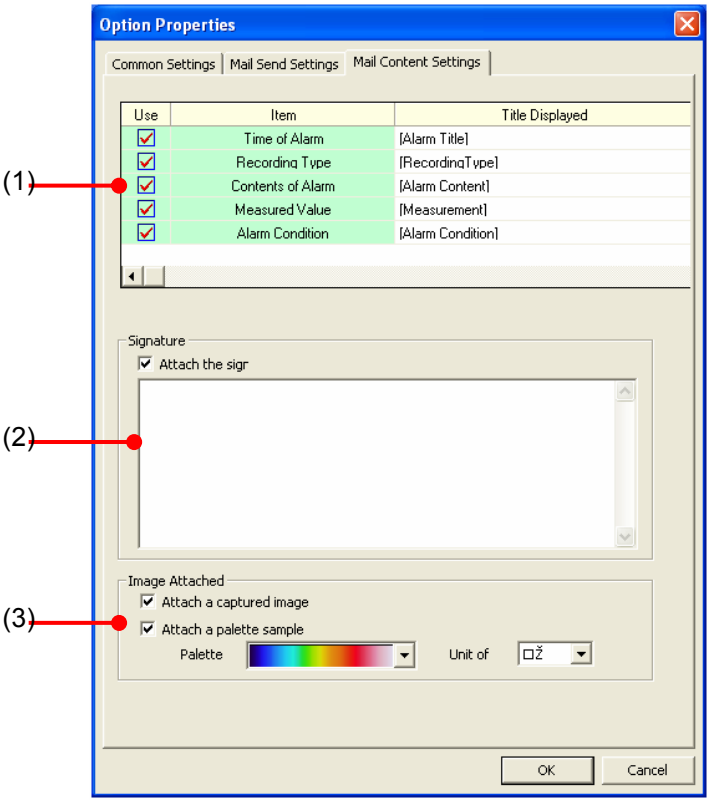
Mail Content Settings tab

Allows you to set up the contents of the mail to be sent in response to an alarm.

(1) Mail Item & Title Settings..... Click the check boxes associated with the items that are to be included in the mail. All the items associated with the check marks will be inserted into the mail. You can change any title by double-clicking the appropriate "Title to Display" field. Also, see the **Example of Mail Contents** on page 39.

(2) Signature ..... You can add a signature (text only) to the mail.

(3) Image Attached ..... Allows you to set whether the image at time of the alarm be attached to the mail. If you check on "Attach a palette sample", this will generate an image that contains the temperature scale attached on the right of the image.



Mail Send Settings tab

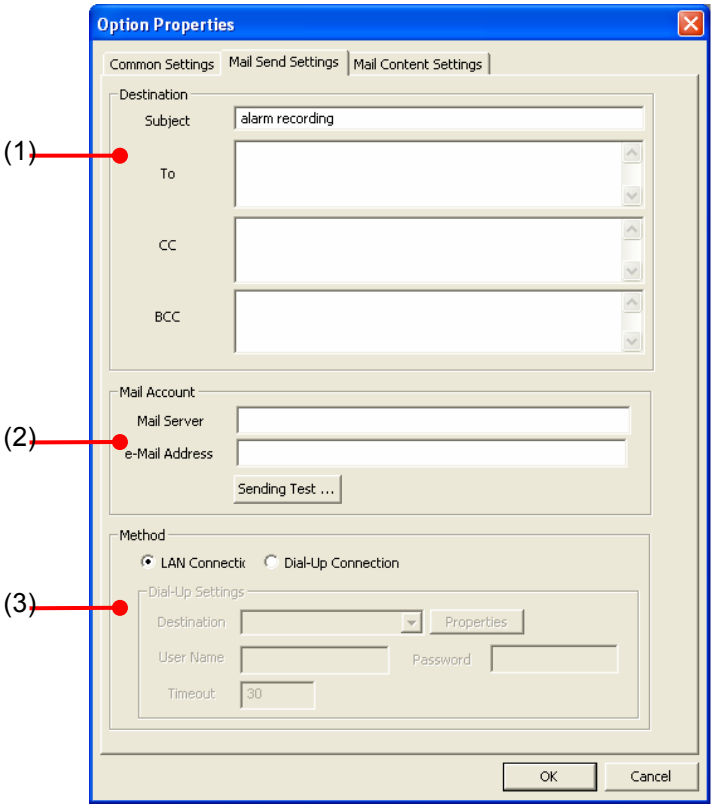
This tab allows you to set up the conditions for sending a mail in response to an alarm.

(1) Destination ..... Set the subject, destination, CC, and BCC of the mail to send. You can send the same mail to up to four destinations that are specified in different lines.

(2) Mail Account..... Specify the originating SMTP mail server and e-mail address. When authentication by the server is necessary, check "Authentication necessary" and set the POP3 server name, account name, and password. You can send the mail with the current settings through the Sending Test button. After pressing the Sending Test button, check that the mail has arrived at the destination.

(3) Method ..... Specify the method of connection to the Internet. If you select **LAN Connection**, the connection will be established according to the settings on the PC. If you select **Dial-Up Connection**, set **Destination**, **User Name**, **Password**, and **Timeout Period (s)**. If you select the destination, the dial-up connection name on Windows will be displayed. If it will not be displayed, complete the Windows dial-up settings first.

By a dialup connection, when you use it by a pulse line, please attach P before a telephone number. Example P03-5436-XXXX



Example of Mail Contents

[Alarm Title]
2006/06/25 14:26:08.528

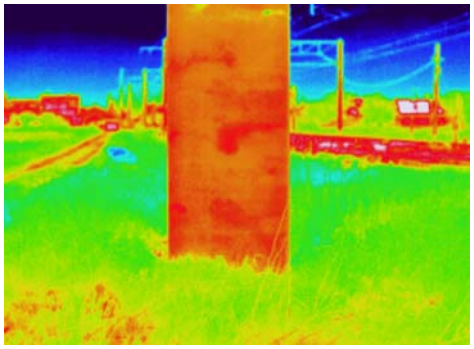
[RecordingType]
Thermal Image

[Alarm Content]
P1 35.98

[Measurement]
P1 35.98

[Alarm Condition]
Condition of Combination AND
P1 => 35.00

(Contents of Signature)



How to display the attached image varies with the mailer of the receiving end.

You can receive mails at your mobile phone in various locations by setting its mail address in place.

Do not use this for alarm notice of important phenomena, because e-mails may fail to reach or their distribution may be delayed.

Recording Settings

The following settings can be done on the Recording Setting screem.

[Object to Record]

(1) Object to Record ..... Selects the image to be recorded. This setting will be used for the next and subsequent starts.

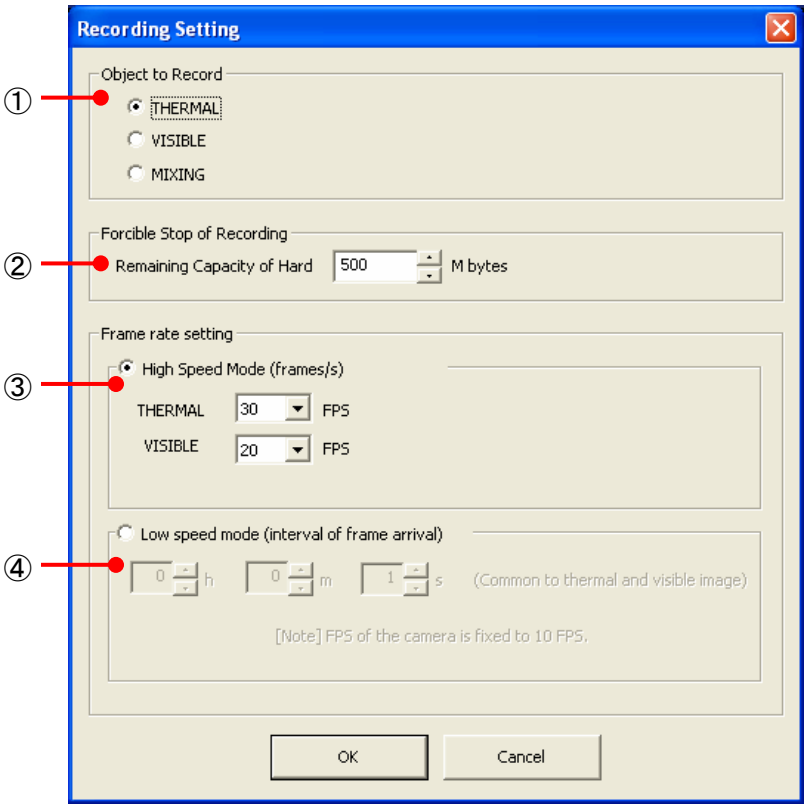
[Forcible Stop of Recording]

(2) Remaining Capacity of Hard ..... When the remaining amount of the hard disk (HD) has went short, operation of Windows becomes unstable. Thus, the remaining amount specified herein should not be exceeded for use for recording. The initial setting is 500 MB.

[Frame Rate Setting]

(3) High-speed Mode ..... Sets the recording frame rate. For details, see Menu Bar → Record/Play Back(R) → Recording Setting Screen (page 26).

(4) Low-speed mode ..... Set the recording interval when it is more than one second. The camera frame rate is fixed at 10fps in the slow-speed mode.



Chapter

3

Instruction of PixCruiser

(Thermal Image File Browser)

1. Main Functions

PixCruiser is a file browser that can display thermal image files IRI and IRM, and popular image files, such as JPG and BMP, in thumbnail form. The main functions of PixCruiser are as follows:

- Folder manipulation ..... Creates a new file, and copies, moves, renames, and deletes a file.
- File manipulation ..... Copies, moves, renames, and deletes a file.
- Folder display ..... Displays the hierarchy of folders.
- Calendar display ..... Displays trees for each year/month/day.
- File display ..... Displays an image file in thumbnail form. The thumbnail images can be resized. This function is available for the following files:
  Thermal image: IRI, IRM,
  Ordinary image: BMP, JPG, TIFF,
- File attribute display ..... Displays the attribute of the file you selected.
- Display refresh ..... Refresh the selection folder tree item and file list to the latest status.
- Association with the application ..... You can select the desired file to start the application.

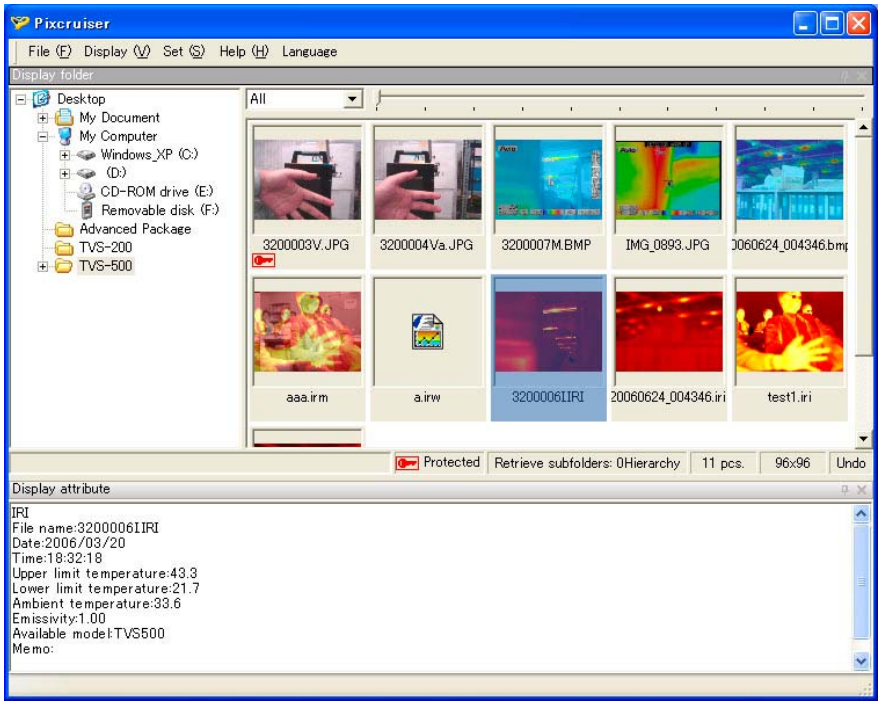
2. Basic Operations

PixCruiser allows you to move, copy, and delete a file or folder by the same operations as Explorer.

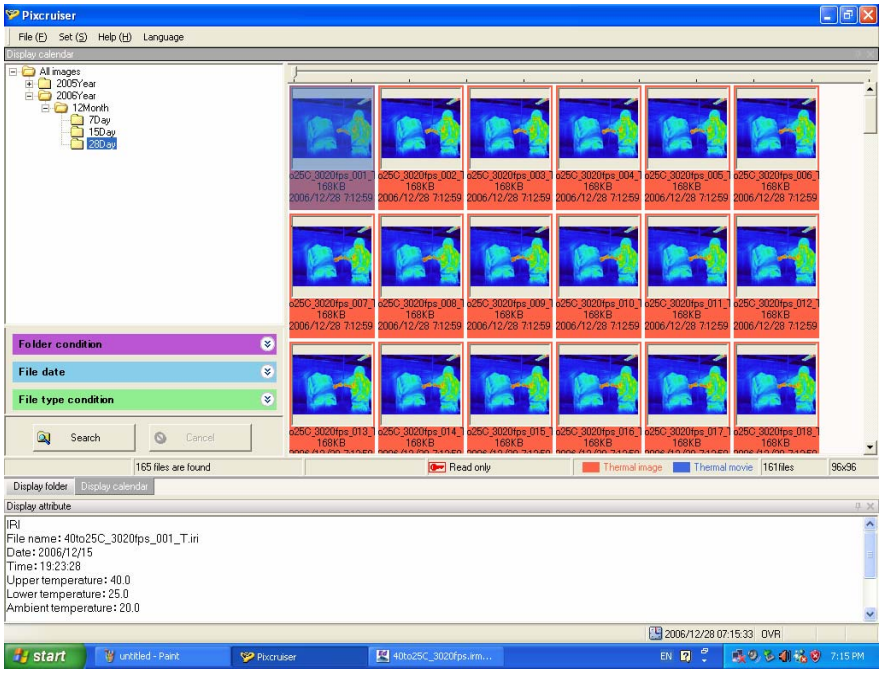
PixCruiser cannot be subjected to multiplex starts

Main Windwow

Folder display window



Calendar display window



Folder Manipulation

To manipulate a folder, you can select the menu item by right-click and perform Drag & Drop. Some short cut keys (**Ctrl+C**, **Delete**, etc.) are also available.

Drag & Drop is available also for either folder move or copy between PixCruiser and Explorer.

Create a New Folder

To create a new folder, right-click the folder you desire to create, and then select **New→ Folder**. The new folder is created under the name of "New Folder".

If another "New Folder" already exists, a serial number will be appended to the folder name.

Copy a Folder

Select and right-click the source folder in the folder tree. After selecting **Copy**, select and right-click the destination folder in the folder tree. Then select **Paste**.

Alternatively, perform Drag & Drop to copy the specified folder. The folder is copied by pressing the **Ctrl** key concurrently.

While you are performing Drag & Drop, the folder cannot be copied within the same list.
Folder copy is not enabled with any short cut key.

Move a Folder

Select and right-click the source folder in the folder tree. After selecting **Cut**, select and right-click the destination folder in the folder tree. Then, select **Paste**.

Alternatively, perform Drag & Drop to move the specified folder.

Rename a Folder

Select and right-click the desired folder in the folder tree. Then, select **Rename** to enter the edit mode.

Rename the folder. Then, click in any location other than the selected item (or press the **Enter** key) to complete the renaming process.

Delete a Folder

Select and right-click the desired folder in the folder tree. Then select **Delete**. As a result, the folder moves into the Trash.

File Manipulation

To manipulate a folder, you can select the menu item by right-click and perform Drag & Drop. This is enabled also by pressing key(s) **Ctrl+C** or **Delete**. Note that the **Ctrl** key is available for copy during Drag & Drop, but the **Shift** key is not available for move during Drag & Drop.

File move and copy by Drag & Drop is enabled also between PixCruiser and the Explorer.

Copy a File

Select and right-click the source file. After selecting **Copy**, select and right-click the destination folder. Then select **Paste**.

Alternatively, perform Drag & Drop to copy the specified file. The folder is copied by pressing the **Ctrl** key concurrently.

You can also use short cut key combination **Ctrl+C** and **Ctrl+V** to copy a file.

While you are performing Drag & Drop, the folder cannot be copied within the same list.

Move a File

Select and right-click the source folder. After selecting **Cut**, select and right-click the destination folder. Then, select **Paste**.

Alternatively, perform Drag & Drop to move the specified folder.

You can also use short cut key combination **Ctrl+X** and **Ctrl+V** to move a file.

Rename a File

Select and right-click the desired file. Then select **Rename** to enter the edit mode. Click in any location other than the selected item. (or press the **Enter** key) to complete the renaming process.

Delete a File

Select and right-click the desired. Then select **Delete**. This is enabled also with the **Del** key.

With the environment settings, you can inhibit the delete function from being available. See Page 49.

The calendar display window permits **Cut** and **Copy**, but it does not permit **Rename**, **Delete**, and **Paste**.

Browse a folder or file

You can browse a folder in the folder tree.

You can single-click a "+" in the tree, or select and double-click a folder to expand the list of subfolders.

To collapse the "-" sign in the tree, or select and double-click a folder to collapse the expanded list of subfolders.

You can collapse the list of subfolders also by right-clicking and then selecting **Develop** or **Fold**.

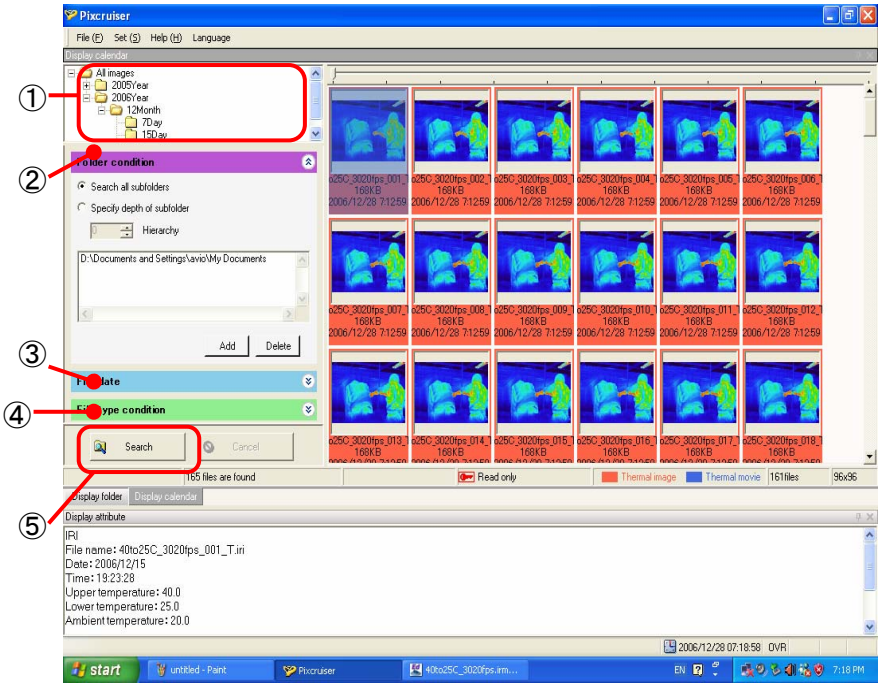
The calendar display window permits almost the same operation.

To browse a file, select the folder in the folder tree.

You can resize the thumbnail images using the slide bar.

Calendar Operation

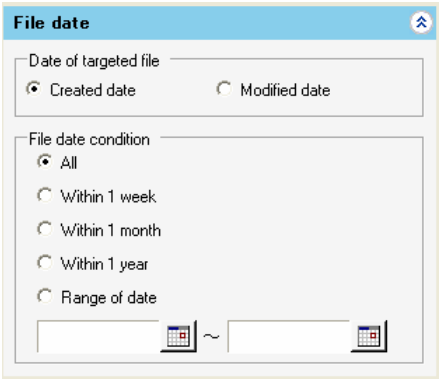
When using the calendar, set "Object Folder," "Date of File," and "Type of File" ((2), (3), and (4) shown below), and then click the "Tree Display" ((5) shown below) button. After searching according to the set condition, the folders ((1) shown below) for each day will appear, permitting browsing of folders of each day. When the entire hard disc is specified or a large number is set for the search subfolder hierarchy, searching will take time or the number of images may exceed the handling limit. Specify a condition so that the number of images will be small.

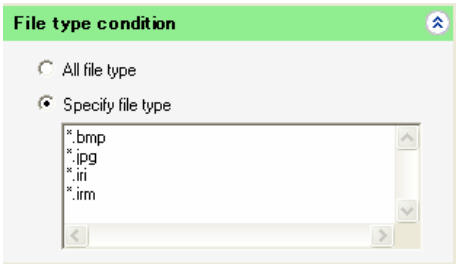


Object Folder ..... Specify the folder to search, or specify the hierarchy of the subfolder to search.

Date of File ..... Specify the date of creation, date of updating (date of photographing), or the period of the file date to search.

Type of File ..... Specify the type of file using an extension as shown below.





Click the button to open or close the "Object Folder," "Date of File," and "Type of File" setting windows. In the case of calendar display window, a red frame is shown for the IRI file and a blue frame is shown for the IRM file.

Enlarged view (preview)

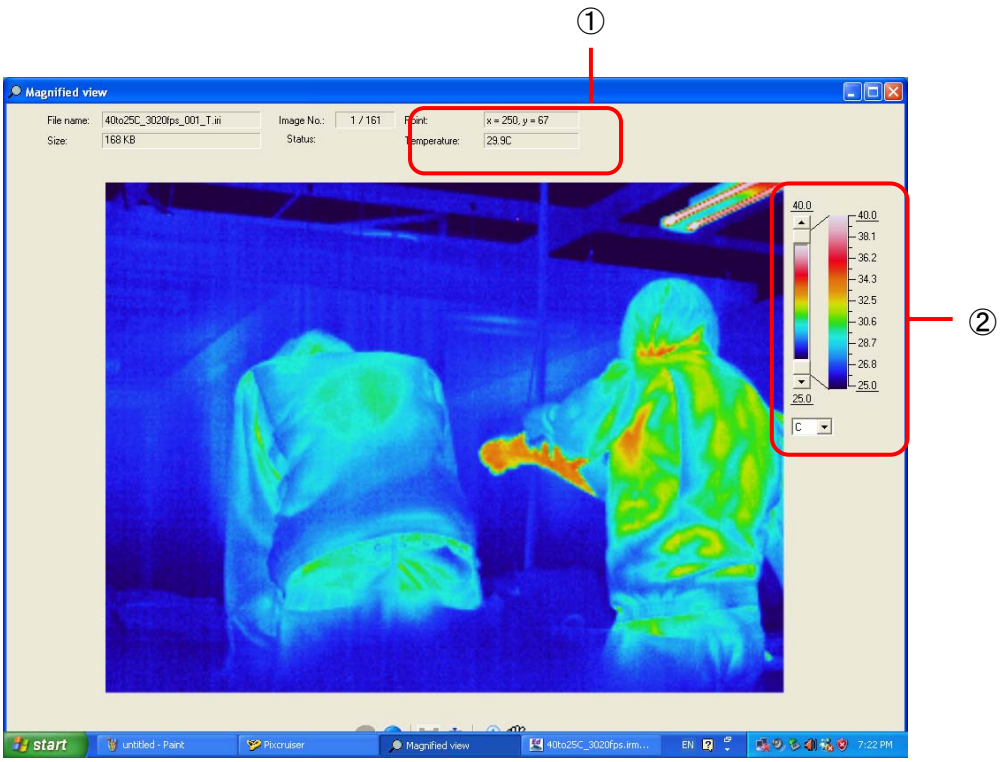
Double-clicking the file open the preview window of the image file.

Double-clicking the preview window clicks closes the preview window.

(1) In the case of IRI or IRM file, the coordinates of the mouse cursor position and the temperature are displayed.

(2) The temperatrue display controller permits change of the display temperature and display color. For detail, refer to "13. Temperature Display Controller" (p.25) of ThermoMovieEditor.

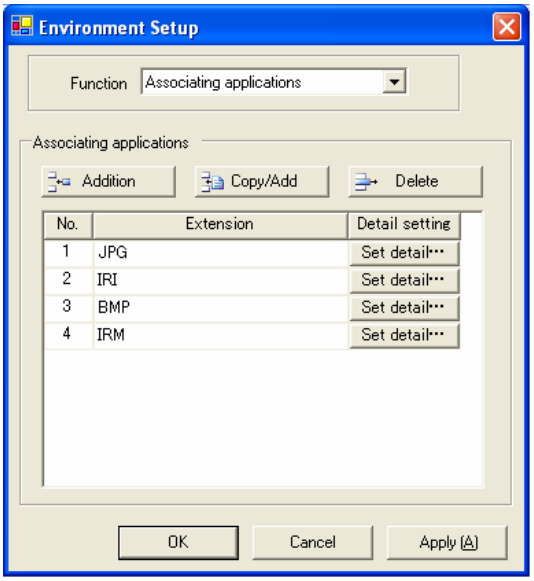
In the case of the IRI file, right-click on the image and the specify "Send" → "Convert To Still Image" to convert the file into a JPEG or BMP file. However, the change of the display temperature range by the temperature display controller for image saving will not be reflected. The image will be saved within the original display temperature range.



3. Environment Settings

After selecting the menu bar, **Set(s)** > **Set environment**, you can customize the software in various manners.

Associating applications



More than one application can be associated with a single expansion.

Add or Delete an Extension

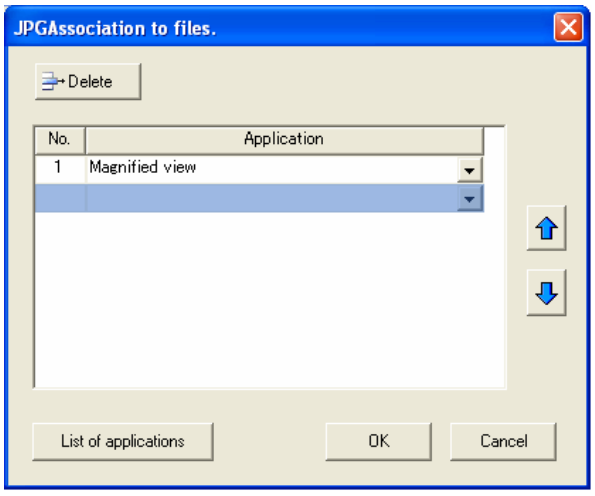
To add a new extension, press the **Addition** button to insert a new blank item. (Line No.5 is added in the example on the right figure.) Enter the extension.

Then, press **SET Detail…** to proceed with addition of the application.

To delete an extension, select it, and then press the **Delete** button.

By selecting the desired extension to copy and pressing the **Copy/Add**, the contents of detailed settings will also be copied.

Add or Delete an Application



To add a new application, select it from the blank drop-down list. If the application is not found in the list, register the next application to add it to the list. You can enter the selectable mode.

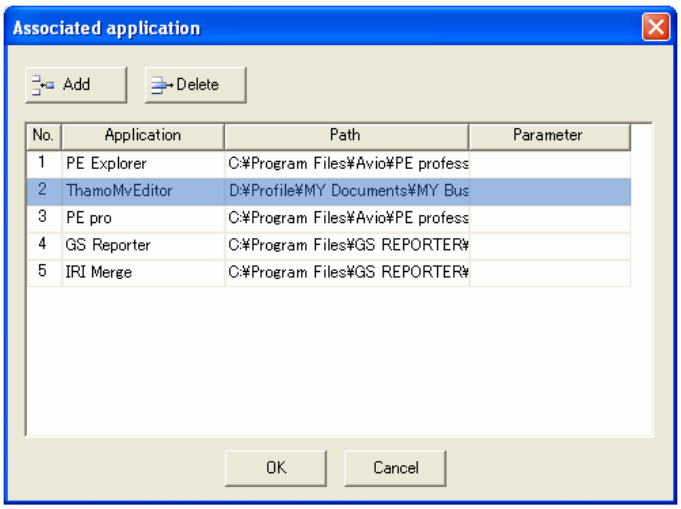
To register the application, press the List of Applications.

To delete an application, select it, and then press the **Delete** button.

Register or Delete an Application

Press the Add button in the window below. A new line is added, which allows you to register an application. You can type the application name as desired. Specify the full path of the desired application to add.

To delete an application extension, select it, and then press the **Delete** button.

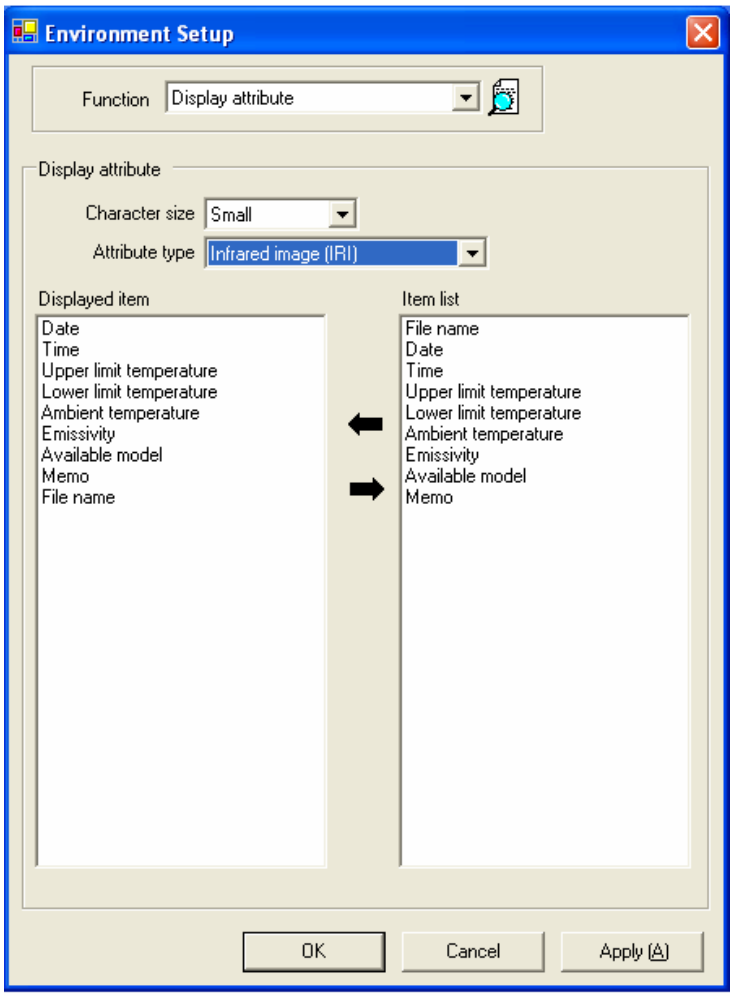


Display attribute

The item the attribute of which is to be displayed can be set for each of the file types (i.e., attribute types).

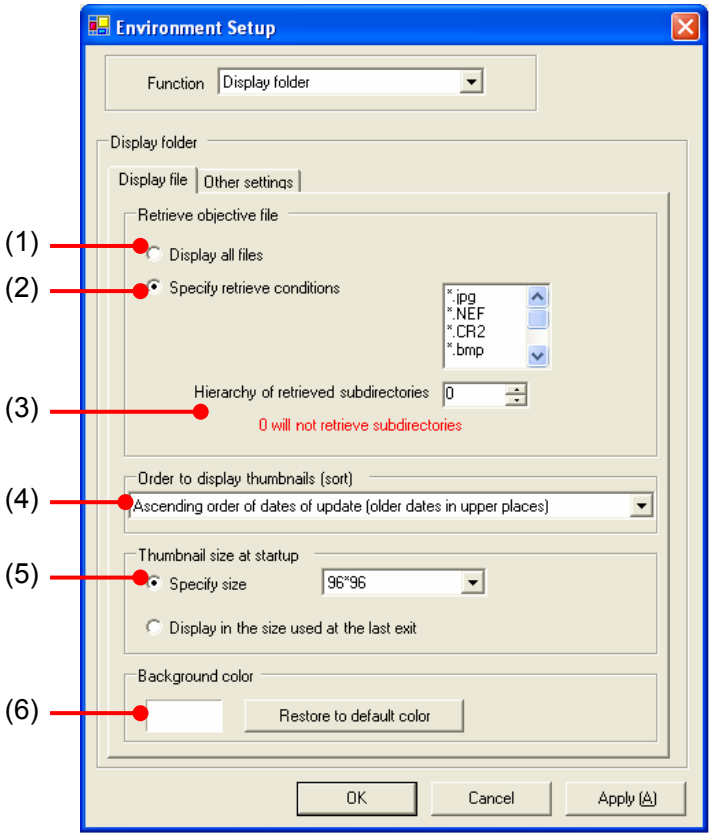
The available attribute type and attribute are fixed. Nothing can be added.

To add or delete an item in the window below, select the item between **Items to Display** and **List of Items**, and then click the arrow.
You can select Large, Medium, or Small for the size of characters to be displayed in the **Display attribute** area.



Display folder

Allows you to perform settings related with file display and others.



(1) Display all the files .....Lists up all the file in the file area.

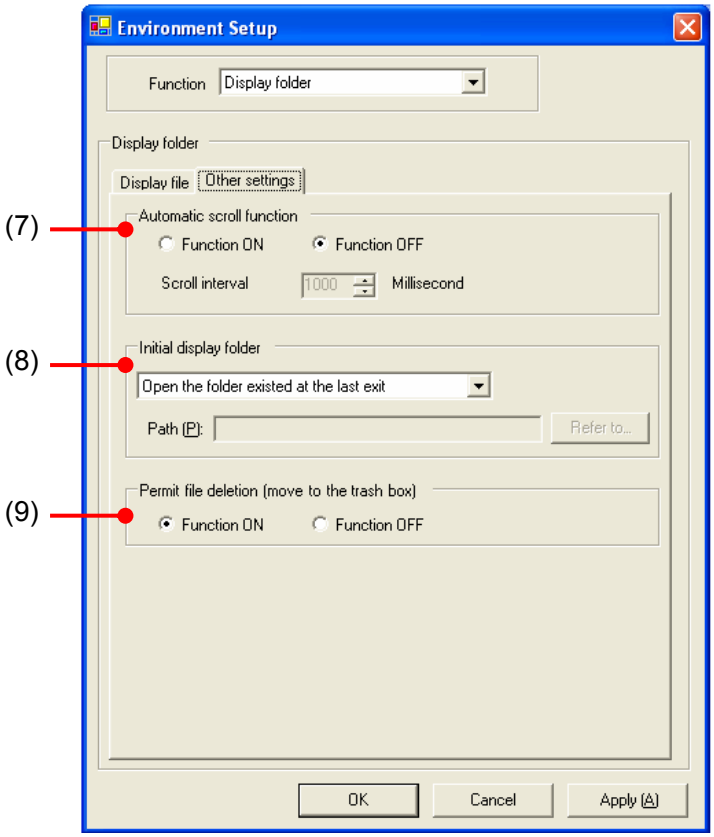
(2) Specify retrieve conditions .....Lists only the files the expansions of which are listed on the right. The initial settings are as listed there. You can add other extensions to the list, however, the files that can be displayed in thumbnail form will be limited in that case.

(3) Hierarchy of retrieved subdirectories……If you specify the folder, the file under it will also be listed. If this is 0, the files in any subdirectory will not be listed. If the setting is 1 (or 2), all the files 1 (or 2) levels downward in the hierarchy will be listed.

(4) Order to display thumbnails .....Specifies how the files be sorted.

(5) Thumbnail size at startup .....You can choose either of the following: (1) specifying the initial thumbnail size following the start, and (2) starting with the last size that was used at the end of the last session. Selectable sizes: 96, 112, 128, 144, 160, 176, 192, 208, 224, 240, and 256

(6) Restore to default color.....Changes the background color of the file area. Double-click the color box to open the color setting window that allows you to select the new color. You can use the **Restore to Default** button to return the color to the initial setting.



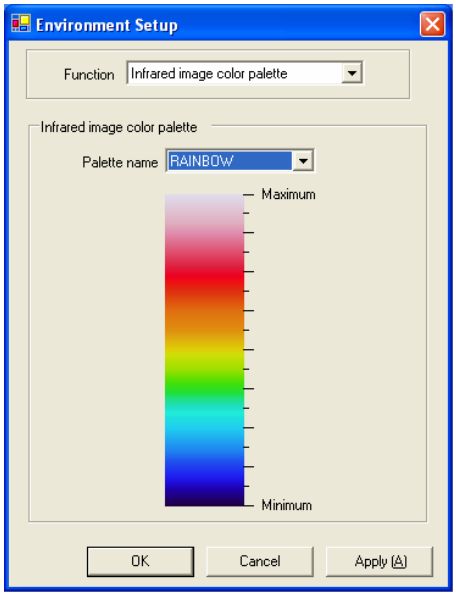
(7) Automatic scroll function .....When a folder is opened and it cannot display at once in a screen, it scrolls automatically and displays.

(8) Initial display folder .....Specifies the folder that is to be displayed immediately after the start.

(9) Permit file deletion .....[move to the trash box] Specifies whether file delete be permitted.

Infrared image color palette

Allows you to specify the color palette with which infrared images are displayed in thumbnail form.

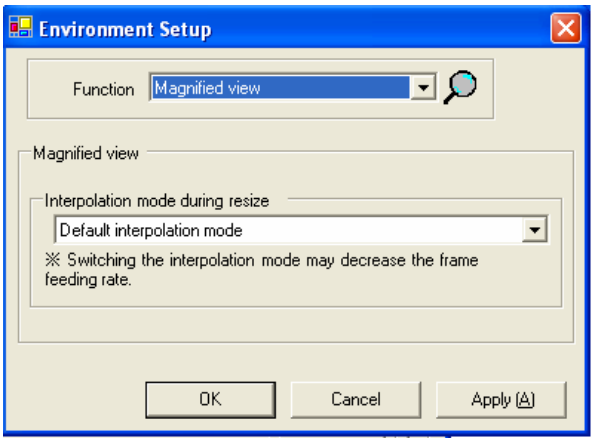


Enlarged View

Allows you to set up various attributes for enlarged views (previews).

In the scaling interpolation mode, you can select the interpolation method that applies when the image is enlarged or reduced.

If the interpolation mode changes, it may take more time to perform interpolation calculation, resulting in slower frame advance.



4. Menu Bar

You can use the following features:

File(F)

Exit..... Exits the application.

Display(V)

Attribute Display (I) ..... Switches between Show/Hide in the attribute display area.

Display folder(F) ..... Switches between the Show and Hide modes in the folder display area.

Set(S)

Settings environment(S)… Displays the environment settings window.

Help(H)

Version(A)… ..... Shows version information.

Language

Select Language..... Switches the language between Japanese and English.

5. Protected

Protects images to prevent them from being deleted carelessly. The protection is achieved by setting the file attributes to Read Only.

The file area allows you to switch between showing the protected image and showing all images.

Chapter

4

Instruction of ThermoMovieEditor

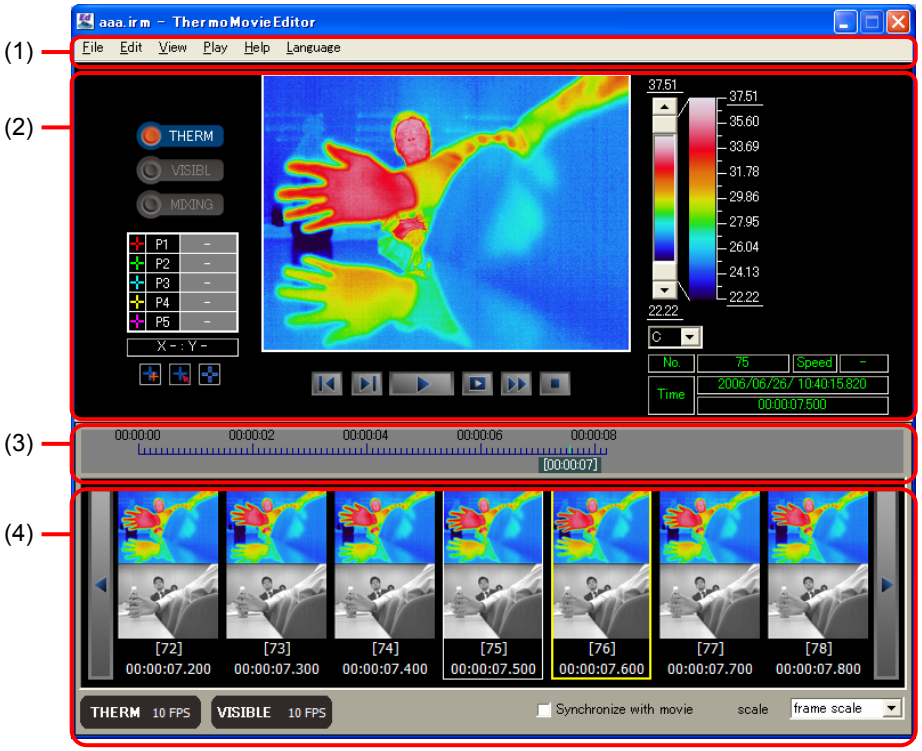
(Thermal Animation Image Editing Tool)

Key Features

The TermoMovieEditor is a thermal animation image editing program that allows reproduction and editing of thermographic image file (.IRM) created by the TermoController. In addition, you can reformat animation image data into still image data using this program. The key features of the ThermoMovieEditor are as follows:

- Animation image reproduction
  Animation image data (.IRM) captured by the ThermoController can be reproduced, featuring the following:
  - Display mode can be changed over with ease (thermal, visual and mixed images)
  - Automatic detection of temperatures at specified spots in the thermal image mode
  - Display of point temperature graph
  - Desired maximum/minimum values of temperature can be set by the user; color pallet is also user-adjustable.
  - Slow replay/reproduction available (1/2, 1/4, 1/10, 1/20, 1/60)
  - Rapid replay/reproduction available (x2, x4, x10, x20, x60)
- Animation image editing
  Animation image data (.IRM) captured by the ThermoController can be edited, featuring the following:
  - Image frames can be copied, cut and pasted.
  - Frame data sending/receiving between two windows (Copy, Cut and Paste functions)
  - Frame rate downsizing (The animation frame rate can be reduced according to the user needs.)
  - Registration and deletion of chapter
- File output function
  - Collective saving of thermal images (iri, jpeg, and bmp) of selected frame
  - Conversion of animation image file format (AVI file)
  - CSV file output of point temperature

Main Screen Display



(1) Menu Bar ····· Contains the Main Menu.

(2) Control Field Window ····· You can perform the same control operations as with the ThermoController except control of TVS. For details, see the section called "Utilizing the ThermoController (TVS Image Transfer Tool)."

(3) Time Scale ····· Indicates the time scale for animation image file together with the on-scale position of the image currently being displayed in the Control field (Point of Display). Clicking on a desired point of the time scale jumps to that point of time. By dragging the Point of Display, you can easily reproduce and view the point.

(4) Edit Animation Area ····· Is used to specify a point of animation image you desire to edit. This area is not displayed on the screen while the animation is being reproduced.

Basic Operation

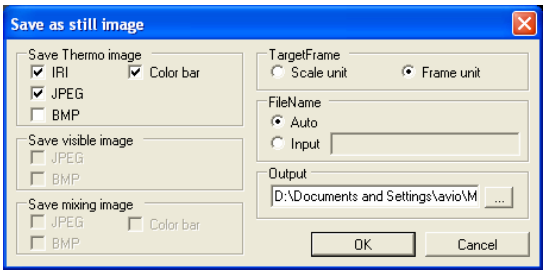
Menu Bar

File

- Create new window(W) ····· Opens a new, blank window.
- Open... (ctrl+O) ····· Opens a dialog box allowing you to specify and open a thermal animation image file.
- Save (ctrl+S) ····· Saves the current file.

- Save As... Opens a dialog box allowing you to enter a new name for the current thermal animation image file and save it as a new file.

- Save as still images(I)…… Opens a dialog box (shown below) to save the displayed image in a file. Images can also be selected from the Pop-up Menu that appears when you right-click the screen.



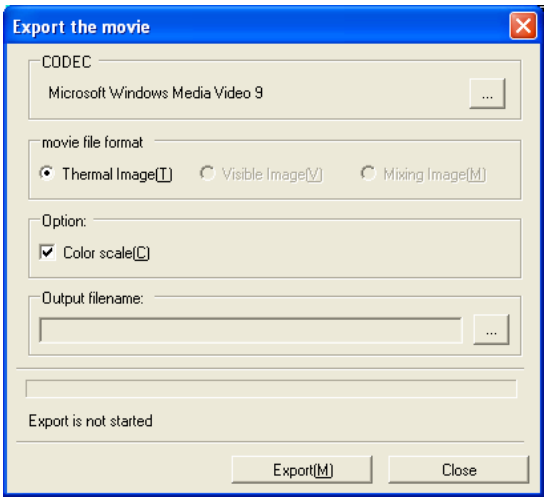
Select the type of file to save, file name, and output destination folder from this dialog box and click the OK button, and the image will be saved according to the specified contents.

- Save as still images within selected range (R)

Opens a dialog box to save selected multiple images in a file. Images can also be selected from the Pop-up Menu that appears when you right-click the screen. The dialog box same as the one for "Save as still images" shown above will appear.

- Save after converting animation image format (E)

Opens a dialog box (shown below) to convert the present thermal animation image file into another animation image file. Specify Windows Media Video 9 usually.



Other CODECs (compression programs) have been installed by some applications other than AdvancedPacakge. Addition of CODEC permits images to be saved in various file formats. The compression ratio and other settings can be changed by CODEC setting, but continued use of the initial value is recommended.

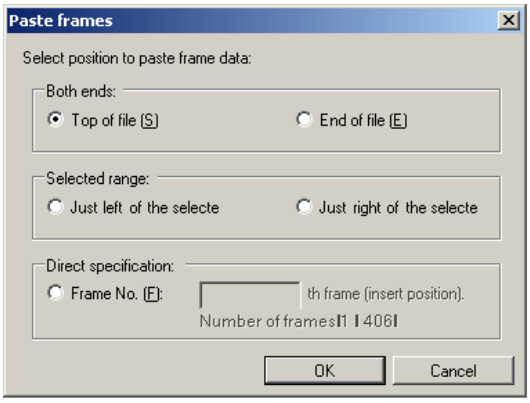
- Save in CSV format (C) … Saves the point temperature trend in a CSV file. The CSV file can be opened by spreadsheet software. When specifying the range and when pixel skipping is desired, use the edit function for editing, and then save it in the CSV format.
- Quit ····· Closes the window and exits AdvancedPackage.

Note that the Save Still Image menu cannot be used when reproduction of image is not running. Use this menu while reproduction of image is in pause (when the Reproduce buttons are as shown below).

When the scale unit is specified for the object frame in the still image saving dialog box, the image will be saved according to the scale shown in the lower right section of the animation image edit area. When the frame unit is specified, all the selected frames will be saved as still images.

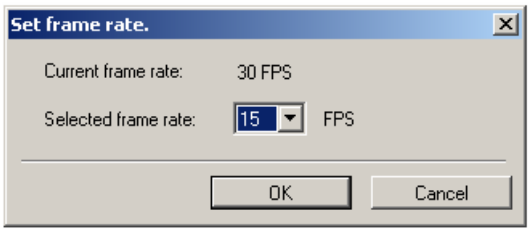
Edit

- Undo (ctrl+Z)····· Undoes the last edit action in a field control.
- Cut (ctrl+X) ····· Removes the selected frame in a field control.
- Copy (ctrl+C) ····· Makes a copy of the selected frame.
- Paste (ctrl+V)····· Pastes copied frames. The screen shown below will open during execution. Specify the data pasting position.



- Delete (Del) ····· Deletes the selected frame.
- Paste in New Window (W) ····· Open the new window, and paste.
- Select All (ctrl+A)····· Selects all the frames in a field control.

- Frame rate change (F) … ····· Reduces the overall number of frames to downsize the file. This is a function that makes the animation image file size compact by reducing the number of these frames. The number of frames that can be changed should be a divisor of the current number of frames.



If the object animation contains both thermal and visual images, the divisor of the number of thermal image frames must be selected.

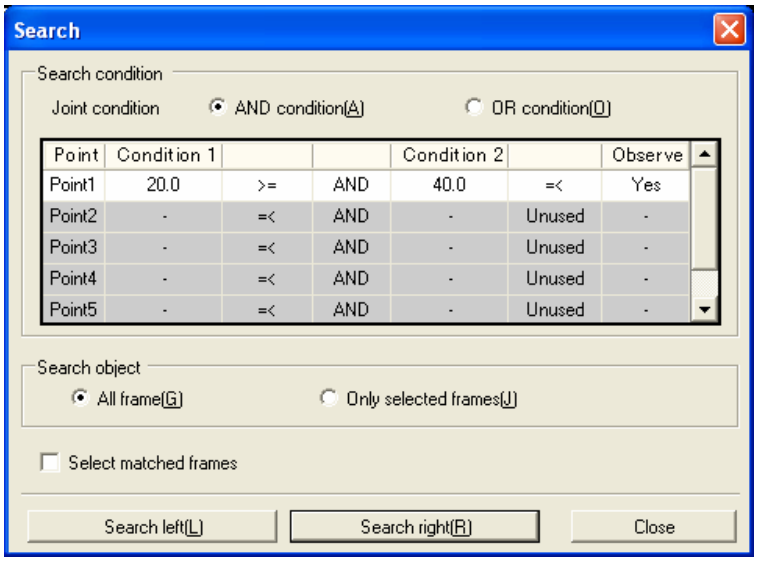
View

- Thermo ····· Displays only thermal images.
- Visible ····· Displays only visual images.
- Mixing ····· Mixes the images on display.
- Display Scale (S) ····· Changes over to scale display.
- Display Graph (G) ····· Changes over to graph display
- Display Point (P) ····· Turns on/ off the display of point.
- Set for each point (A) ····· Opens the submenu for setting by point.
  - Point 1 ····· Turns point 1 on/off.
  - Point 2 ····· Turns point 2 on/off.
  - Point 3 ····· Turns point 3 on/off.
  - Point 4 ····· Turns point 4 on/off.
  - Point 5 ····· Turns point 5 on/off.
- Contract time scale (S) ····· Shortens the time scale.
- Expand time scale (L) ····· Lengthens the time scale.
- Chapter list (C) ····· Turns ON/OFF the chapter list display.

Search (S)

- Find (F) ····· Opens the search dialog box. Specify the point temperature condition, and the frame in question can be searched.
- Seach Right (R) ····· Frames are searched rightward (future) from the present frame according to the condition specified by Find (F).
- Seach Left (L) ····· Frames are searched leftward (past) from the present frame according to the condition specified by Find (F).

Search dialog



Frame search based on the combination of five conditions of point temperature is possible. Refer to "Point Condition" on page 36 for the method of setting.

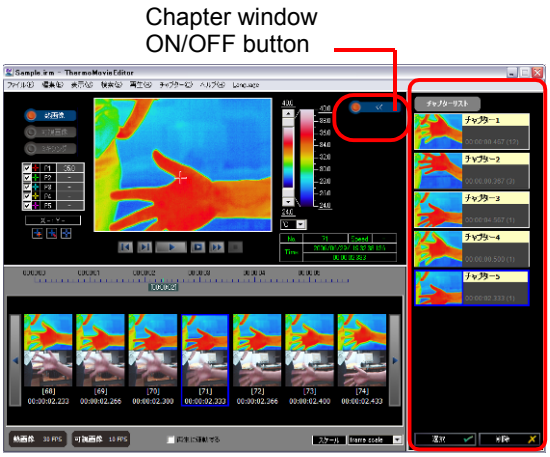
Specify "Select frames that meet search condition," and the frames that meet the condition will be selected after search. That range can be saved as a chapter by using the chapter function.

Play

- Play (P)/ Pause (P) — Reproduces or stops reproduction temporarily. "Temporary Stop" is highlighted during reproduction run, and "Reproduce" is highlighted during temporary stop of reproduction.
- Stop (A) ····· Halts image reproduction run.
- Replay only selected range(R) Reproduces image data of the selected area.
- Repeat (T)····· Repeats to reproduce image data.
- Slow (S) ····· Slows down image reproduction run (replaying).
- Fast forward (U)····· Speeds up image reproduction run (replaying).
- Play speed (C) ····· Changes the reproduction run (replaying) speed.
- Previous frame (B)····· Displays the previous frame.
- Next frame (F) ····· Displays the next frame.
- Jump to specified position (G)·· Jumps to the applicable frame according to the specified frame No. or time.

Chapter (C)

- Chapter registration (A) ····· Registers the selected frame as a chapter. After registration, it will be registered in the chapter list shown within the red frame in the figure below.



- Delete Chapter (R) ····· Deletes the selected chapter.
- UP (U)····· Moves the selected chapter position to one line above.
- DOWN (D) …····· Moves the selected chapter position to one line below.
- Select frame in chapter (S)····· Selects all the frames included in the selected chapter.
- Property of chapter (P) ····· Displays the property screen of the chapter (shown below).

Help

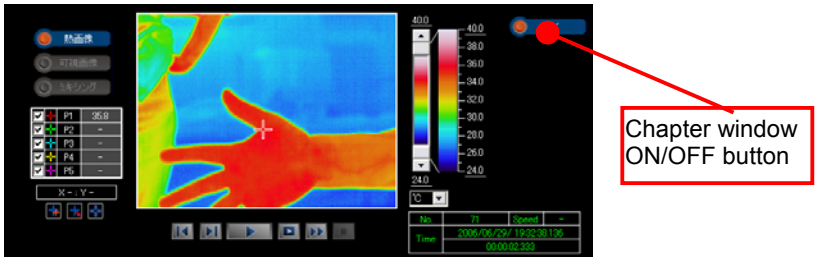
- About… ····· Displays the version information box.

Language

- Language ····· Displays the language selection window.

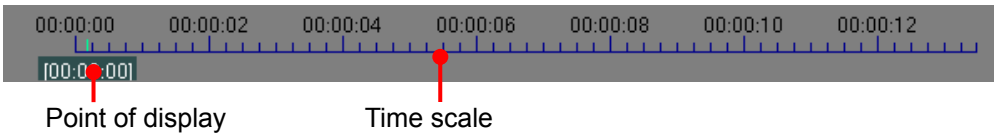
Control Field Window

You can perform the same control operations as with the ThermoController except control of TVS. For details, see the section called "Utilizing the ThermoController (TVS Image Transfer Tool)."



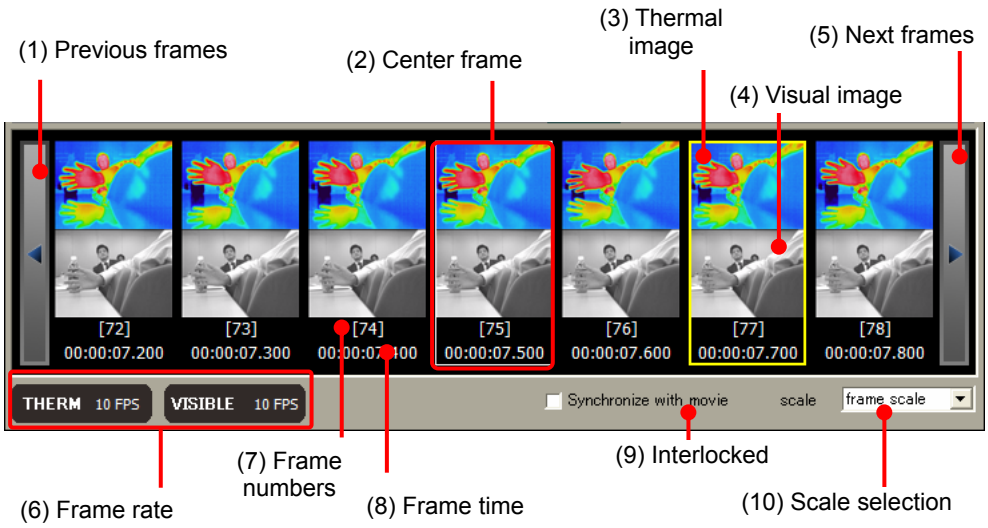
Time Scale

This scale indicates the time scale for animation image file together with the on-scale position of the image currently being displayed in the Control field (Point of Display). Clicking on a desired point of the time scale jumps to that point of time. By dragging the Point of Display, you can easily reproduce and view the point.



Edit Animation Area

This area is used to specify a point of animation image you desire to edit. This area is not displayed on the screen while the animation is being reproduced.



(1), (5) Previous/Next frames ··· Shifts frames before and behind following the current time scale on display. Use these buttons for fine adjustment of frames you need to edit. You can change the center frame by continuously holding down these buttons.

(2) Center frame ····· Displays the frame currently being displayed on the screen at the center of this area.

(3) Thermal image ····· Displays the thermal image frame.

(4) Visual image ····· Displays the visual image frame.

(6) Frame rate ····· Indicates the frame rates for the respective images.

(7) Frame numbers ····· The current series of frame numbers starting from "zero" (the head frame).

(8) Frame time ····· The current frame time starting from "00:00:00.000" (the head frame).

(9) Interlocked ····· Check the "Interlock reproduction" checkbox if you desire to interlock the frames in this area with the image in the Control field. This feature is useful for searching the point to be edited.
Note: Checking this checkbox increases the load on your PC, which could cause slowdown in reproduction speed to some types of PC depending on the specifications; therefore, we recommend you to deselect (empty) the checkbox when your aim is to run reproduction of images.

(10) Scale selection ····· Selects the unit of the time scale from among "frame/second/minute/hour." Copying, deleting, and all other command operations included in the Edit Menu are performed based on the selected unit.

Scale Display

As mentioned above, copying, deleting, and all other command operations included in the Edit Menu are performed based on the selected unit. Examples are illustrated below for your better understanding.

Example) For 30-second frame animation images

With "frame scale"

1 scale (1 frame)	2 scale (2 frame)	3 scale (3 frame)	4 scale (4 frame)	5 scale (5 frame)	…

With "second scale"

1 scale (1-30 frame)	2 scale (31-60 frame)	3 scale (61-90 frame)	4 scale (91-120 frame)	5 scale (121-150 frame)	…

With "minute scale"

1 scale (1-1800 frame)	2 scale (1801-3600 frame)	3 scale (3601-5400 frame)	4 scale (5401-7200 frame)	5 scale (7201-9000 frame)	…

Selecting a Scale (Frame)

Follow the instructions below to select a scale (frame):

- Mouse click ····· When you click the mouse on a scale, that scale is selected and all scales previously selected are cancelled.
- Shift + Click ····· You can select all the scales from the one on which you click the mouse to that on which you click the mouse while holding down the Shift key.
- Ctrl + Click ····· You can reverse the selection state (Selected - Non-selected) of the scale on which you click the mouse without canceling the scales previously selected.

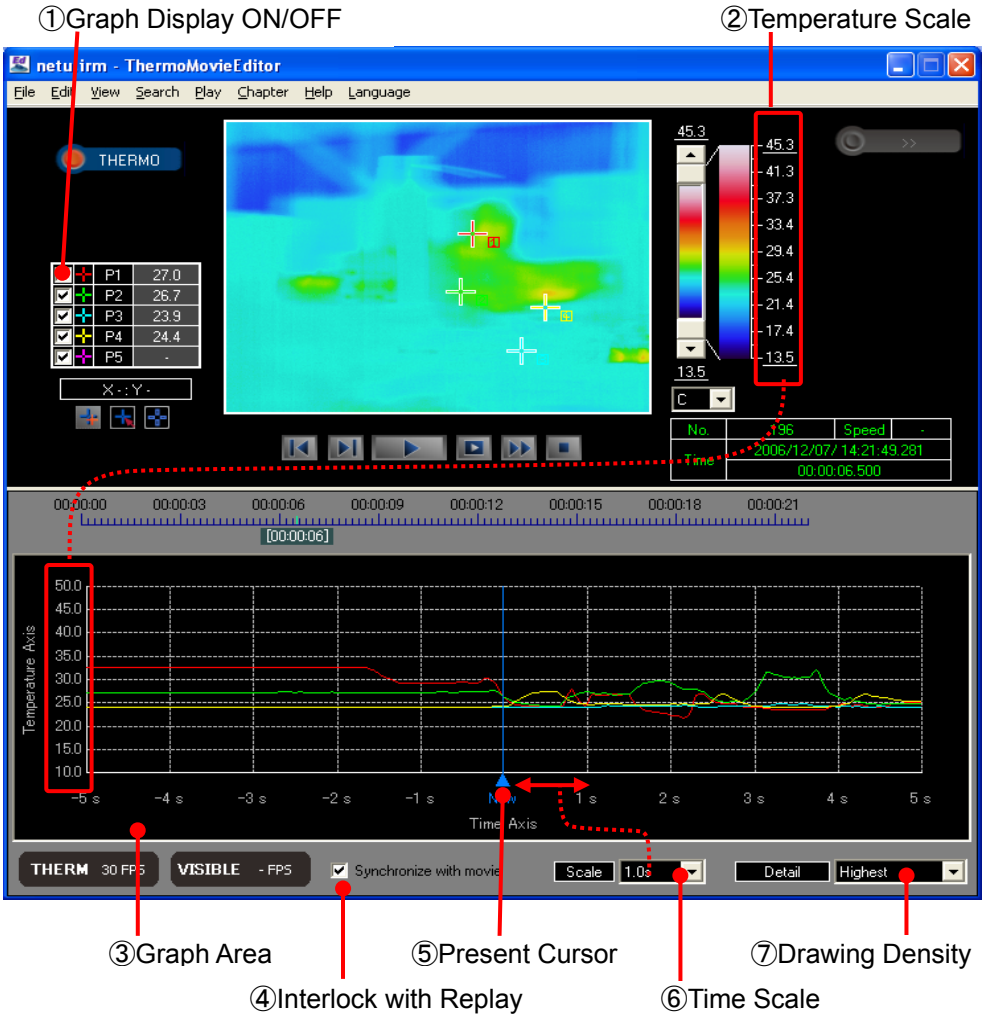
The selection state is held even when the selected scale goes out of the display screen by operation of the Previous and Next Frame buttons.

Selection depends on the selected unit of the time scale. For example, if you have previously selected the "second scale" and you select scale 1 for an animation file photographed at 60 fps, this means that you are selecting the image of 60 frames.

Graph Area

Select View (V) → Graph Display (G) on the menu bar, or touch the F7 key to display the graph. The point temperature trend graph will be displayed.

To return to the scale (animation image editing) display, select View (V) → Scale Display (S), or touch the F6 key.



(1) Graph display ON/OFF ····· Checks the point to display.

(2) Temperature scale ····· This temperature range is the vertical axis of the graph.

(3) Graph area ····· Graph display area

(4) Interlock with replay ····· When checked, the graph moves simultaneously with replay.

(5) Present cursor ····· Indicates the image shown in the upper section. It moves right or left when the light blue cursor (line) or the ▲ mark is dragged.

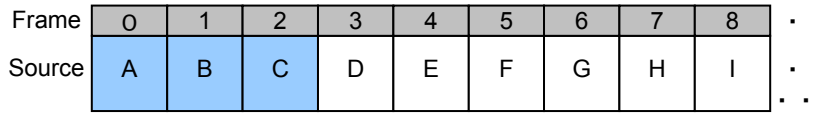
(6) Time schedule (horizontal axis) ····· Specifies the time of one frame of the horizontal axis.

(7) Drawing density ····· Specifies the drawing density. If the drawing density is increased when the file size is large, drawing will take time.

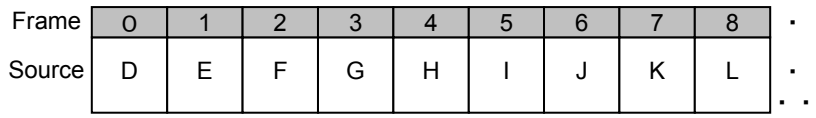
Editing Animation Image Data

Deleting Unnecessary Head Frames

1. Select the three head frames, for example.

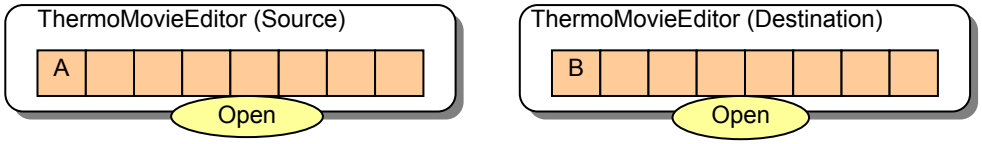


2. Run **Delete**.

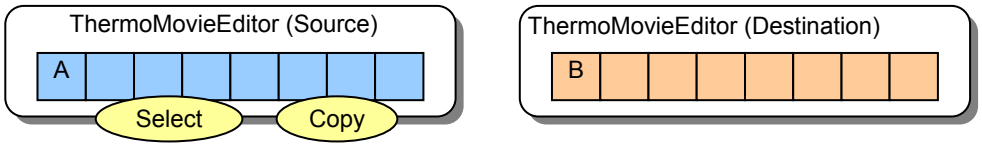


Unifying Two Animation Images

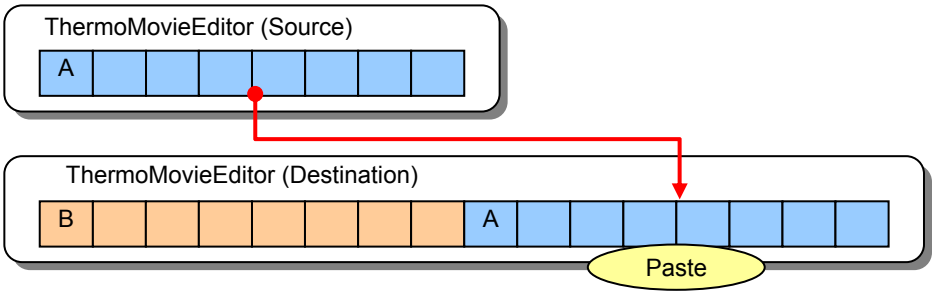
1. Start the ThermoMovieEditor twice and read each respective image.



2. Using the ThermoMovieEditor for the source image, select all frames and copy them.



3. Paste the source image to that of destination using the ThermoMovieEditor for the latter.



Note that you cannot copy or paste between the following files:

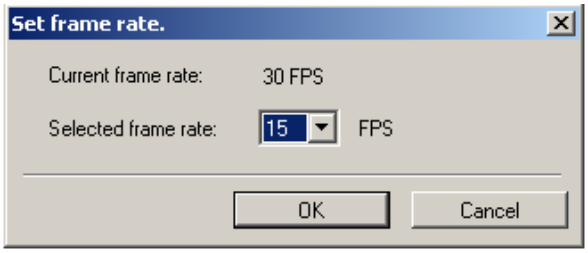
1. Copy of an animation file containing both thermal and visual image data to another animation file that contains only thermal or visual image data.
2. Copy of an animation file containing only thermal image data to another animation file that contains only visual image data
3. Copy of an animation file containing only visual image data to another animation file that contains only thermal image data
4. Copy between animation files having different frame rates (except such animation file containing both thermal and visual image data and whose thermal image frame rate coincides with that of the thermal image contained in the file of destination).

Changing the Frame Rate

This feature is used to make the animation image file size compact by reducing the number of frames.

From the File Menu, choose Change Frame Quantity. A window opens allowing you to specify the number of frames. Specify a desired number and click the **OK** button. After change is complete, save the new file using the Save or Save As menu.

The number of frames that can be changed should be a divisor of the current number of frames.



If the object animation contains both thermal and visual images, the divisor of the number of thermal image frames must be selected.

Saving Still Image Data

The selected frame can be saved in a thermal image file (.iri).

From the File Menu, choose Save Still Image. A window opens allowing you to specify the file name. This item can also be selected from the Pop-up Menu that appears when you right-click the screen.

Note that the Save Still Image menu cannot be used when reproduction of image is not running. Use this menu while reproduction of image is in pause (when the Reproduce buttons are as shown below).

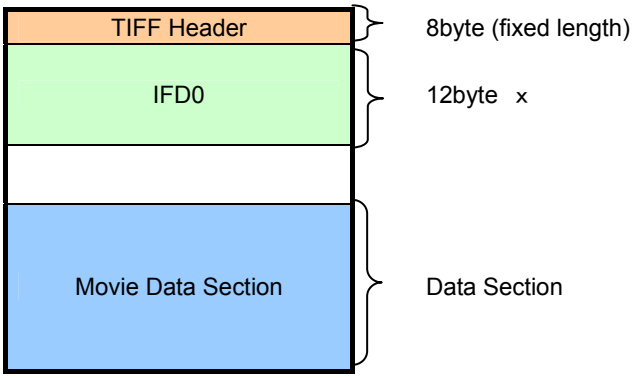
Appendix

A

Appendix 1
Specifications for Thermal Animation Image File

File Structure

The thermal animation image file is based on TIFF File Format (Tag Image File Format), except a part of the format which is the original specifications of our own.



Structure of Thermal Movie File

Thermal Animation Image File Layout

DEC	HEX	NAME		TYPE	DESCRIPTION	Byte Count
0	0x00	Byte order		ASCII	"II"	2
2	0x02	Version		SHORT	0x002A	2
4	0x04	Offset to IFD0		LONG	0x00000008	4
8	0x08	IFD0 Tag Counts		SHORT	20	2
10	0x0A	Image Width (H. Pixel Counts)	Tag	SHORT	256	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	320	4
22	0x16	Image Length (V. Pixel Counts)	Tag	SHORT	257	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	240	4
34	0x22	Maker	Tag	SHORT	271	2
			Type	SHORT	2 (ASCII)	2
			Count	LONG	16 (Fixed Length)	4
			Value	LONG	0x000000FE	4
46	0x2E	Model Name	Tag	SHORT	272	2
			Type	SHORT	2(ASCII)	2
			Count	LONG	16 (Fixed Length)	4
			Value	LONG	0x0000010E	4
58	0x3A	Strip Offsets (Offset to Movie Data)	Tag	SHORT	273	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	0x00010DE6	4
70	0x46	StripByteCounts	Tag	SHORT	279	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	2	4
			Value	LONG	0x011E	4
82	0x52	Thermal Movie File Version	Tag	SHORT	33024	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	0x00000001	4
94	0x5E	Movie File Type	Tag	SHORT	33025	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	*Reffer to following	4
106	0x6A	Record Format	Tag	SHORT	33026	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	*Reffer to following	4
118	0x76	Recording Start Time	Tag	SHORT	33027	2
			Type	SHORT	2(ASCII)	2
			Count	LONG	32 (Fixed Length)	4
			Value	LONG	0x00000126	4
130	0x82	Recording Stop Time	Tag	SHORT	33028	2
			Type	SHORT	2(ASCII)	2
			Count	LONG	32 (Fixed Length)	4
			Value	LONG	0x00000146	4

DEC	HEX	NAME		TYPE	DESCRIPTION	Byte Count
142	0x8E	Thermal Movie Rate [fps]	Tag	SHORT	33029	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	Thermal Movie Rate [fps]	4
154	0x9A	Visual Movie Rate [fps]	Tag	SHORT	33030	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	Visual Movie Rate [fps]	4
166	0x0A6	Number of Editing Times	Tag	SHORT	33031	2
			Type	SHORT	4 (LONG)	2
			Count	LONG	1	4
			Value	LONG	0x00000000 (Initial Value)	4
178	0x0B2	Cameraman	Tag	SHORT	33032	2
			Type	SHORT	2 (ASCII)	2
			Count	LONG	64	4
			Value	LONG	0x00000166	4
190	0x0BE	Place of Thermography	Tag	SHORT	33033	2
			Type	SHORT	2 (ASCII)	2
			Count	LONG	64	4
			Value	LONG	0x000001A6	4
202	0x0CA	Point Information	Tag	SHORT	33034	2
			Type	SHORT	1 (BYTE)	2
			Count	LONG	1024 (Fixed Length)	4
			Value	LONG	0x000001E6	4
214	0x0D6	Alarm Condition	Tag	SHORT	33035	2
			Type	SHORT	1 (BYTE)	2
			Count	LONG	1024 (Fixed Length)	4
			Value	LONG	0x000005E6	4
226	0x0E2	Comment Information	Tag	SHORT	33036	2
			Type	SHORT	2 (ASCII)	2
			Count	LONG	1024 (Fixed Length)	4
			Value	LONG	0x000009E6	4
238	0x0EE	Chapter Infomation	Tag	SHORT	33037	2
			Type	SHORT	1 (BYTE)	2
			Count	LONG	65536 (Fixed Length)	4
			Value	LONG	0x00000DE6	4
250	0x0FA	NEXT IFD	LONG		0x00000000	4
254	0x0FE	Maker Name	Data		Avio	16
270	0x10E	Model Name	Data		TVS-500	16
286	0x11E	StripByteCounts	ULONGLONG		Data Size	8
294	0x126	Recording Start Time	Data		yyyymmddhhmmssnnn	32
326	0x146	Recording Stop Time	Data		yyyymmddhhmmssnnn	32
358	0x166	Cameraman	Data		Cameraman	64
422	0x1A6	Place of Thermography	Data		Place of Thermography	64
486	0x1E6	Point Information	Data		Point Information	1024
1510	0x5E6	Alarm Condition	Data		Alarm Condition	1024
2534	0x9E6	Comments	Data		Comment	1024
3558	0x0DE6	Chapter Information	Data		Chapter Information	65536
69094	0x10DE6	Header of Movie	Data		Header of Movie	64
69158	0x10E26	1st Farme of Movie Data	Data		1st Farme of Movie Data	
		:	:		:	:
		Nth Frame of Movie Data	Data		Nth Frame of Movie Data	

List of User Tags

Tag Name	Tag Value	
	DEC	HEX
Thermo movie file version	33024	0x8100
Movie file type	33025	0x8101
Recording format	33026	0x8102
Recording start time	33027	0x8103
Recording stop time	33028	0x8104
Thermal movie speed (fps)	33029	0x8105
Visual movie speed (fps)	33030	0x8106
Editing times	33031	0x8107
Cameraman	33032	0x8108
Place of thermography	33033	0x8109
Point information	33034	0x810A
Alarm condition	33035	0x810B
Comments	33036	0x810C
Chapter information	33037	0x810D

Animation Image File Type

Type name	Value	
	DEC	HEX
Thermal image only	0	0x00
Visual image only	1	0x01
Both image	2	0x02

Image Recording Format

Format	Value	
	DEC	HEX
Normal recording	0	0x00
Alarm recording	1	0x01

Point Information

Point Information consists of one point information header and zero or more point information data.

Point information header
Point information data
Point information data
:
Point information data

Point information header

Item	Size	Description
Number of Point	4	Number of Point Infomation
(Reserve 1)	4	Reserve
(Reserve 2)	4	Reserve
(Reserve 3)	4	Reserve

Point information dat

Item	Size	Description
Type	4	A kind of Point
Left position	2	Left position
Top position	2	Top position
Width	2	Width
Height	2	Height
(Reserved)	4	Reserved

Alarm Condition

Alarm Condition consists of one alarm conditional header and zero or more alarm conditional data.

Alarm condition header
Alarm condition data
Alarm condition data
:
Alarm condition data

Alarm Conditional Header

Item	Size	Description
Count of alarm condition	4	Count of alarm condition
Condition	2	AND / OR
(Reserve 1)	2	Reserve
(Reserve 2)	4	Reserve
(Reserve 3)	4	Reserve

Alarm Conditional Data

Item	Size	Description
Point Nunber	4	ポイント No
Minimum Temperature	4	
Maxmum Temperature	4	
Minimum Tenperature Type	2	
Maxmum Tenperature Type	2	
Condition	2	AND/OR
Use/ Not use	2	

Chapter Information

Chapter Information consists of one chapter information header and zero or more chapter information data.

Chapter information header
Chapter information data
Chapter information data
:
Chapter information data

Chapter Information Header

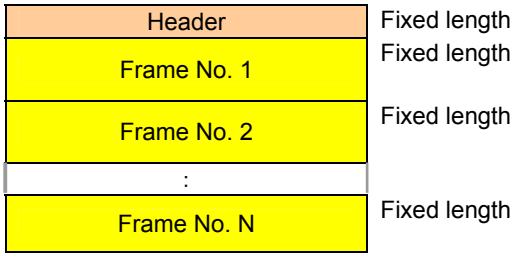
Item	Size	Description
Count of capter	4	Count of capter data
(Reserve 1)	4	Reserve
(Reserve 2)	4	Reserve
(Reserve 3)	4	

Chapter Information Data

Item	Size	Description
Start frame number	8	Start frame number
End frame number	8	End frame number
Name of chapter	64	Name of chapter
memo	128	memo
(Reserve 1)	48	Reserve

Animation Data Division Format

Animation Data Division is composed of one header division and one or more frames.



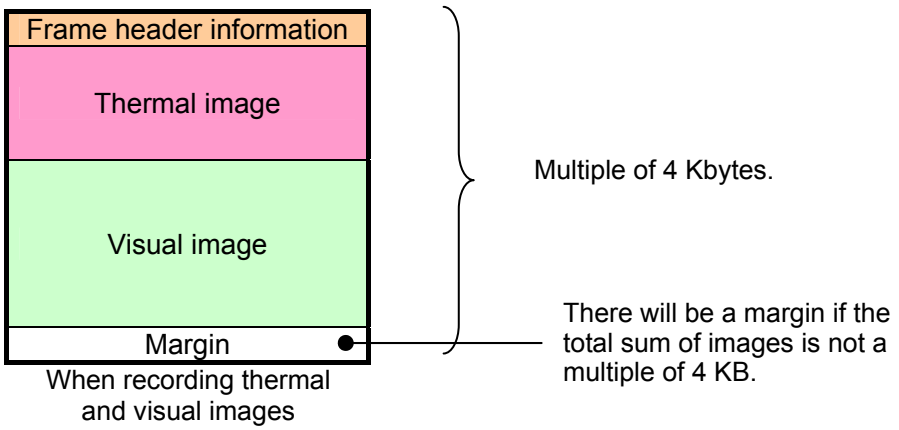
Animation Data Division Structure

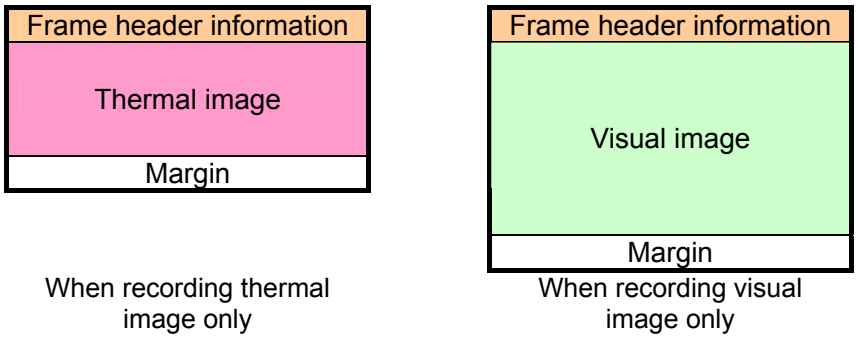
Header Division (64 Bytes)

No	Offset	Item	Size	Value
1	0	Version	4	0x00000000
2	4	Movie file type	4	
3	8	Total frame count	8	
4	16	Frame size	4	
5	20	Thermo image data size	4	154240
6	24	Visual image data size	4	230400
7	28	Thermo Image speed (fps)	2	
8	30	Visual Image speed (fps)	2	
9	32	"lowDateTime" of recording start FILETIME	4	
10	36	"highDateTime" of recording start FILETIME.	4	
11	40	Playback rate (ms)	4	
12	44	Reserved	20	reserved

Frame

- Each frame stores one frame captured by an infrared camera.
- Thermal and visual images are combined in one frame.
- Different frame formats are used when only thermal or visual images are to be stored in one frame.
- The frame size must be a multiple of 4 Kbytes. If the total sum of thermal and visual images does not coincide with the frame size, there will be a margin.


Frame header information
Thermal image
Visual image
Margin
Multiple of 4 Kbytes.
There will be a margin if the total sum of images is not a multiple of 4 KB.
When recording thermal and visual images



Frame Header (48 Bytes)

No	Offset	Item	サイズ	Value
1	0	Frame number	8	
2	8	Thermal image data yes/ no	2	
3	10	Visual image data yes/ no	2	
4	12	Thermal frame number	4	
5	16	Visual frame number	4	
6	20	lowDateTime of FILETIME	4	
7	24	highDateTime of FILETIME	4	
8	28	(Reserve 1)	4	
9	32	(Reserve 2)	4	
10	36	(Reserve 3)	4	
11	40	(Reserve 4)	4	
12	44	(Reserve 5)	4	

Appendix 2 CSV File Format

Comma-delimited text data is output in the order shown below. The data up to linefeed is one record (1 = Frame).

Frame No., recording time (year), (month), (day), (minute), (second), (millisecond), Point 1 temperature, Point 2 temperature, Point 3 temperature, Point 4 temperature, Point 5 temperature, and unit of temperature.

Sample of text

```
Frame No.,Recording Date (Year),Recording Date (Month),Recording Date
(Day),Recording Date (Hour),Recording Date (Minute),Recording Date
(Second),Recording Date (Milli Second),P1,P2,P3,P4,P5,Temperature Unit
1,2006,6,29,19,32,35,896,35.7,,,,,C
2,2006,6,29,19,32,35,928,35.4,,,,,C
3,2006,6,29,19,32,35,960,35.3,,,,,C
4,2006,6,29,19,32,35,992,35.5,,,,,C
5,2006,6,29,19,32,36,24,35.3,,,,,C
6,2006,6,29,19,32,36,56,35.7,,,,,C
7,2006,6,29,19,32,36,88,35.8,,,,,C
8,2006,6,29,19,32,36,120,35.9,,,,,C
9,2006,6,29,19,32,36,152,33.9,,,,,C
10,2006,6,29,19,32,36,184,28.0,,,,,C
11,2006,6,29,19,32,36,216,27.1,,,,,C
12,2006,6,29,19,32,36,248,26.8,,,,,C
```

Sample of table (Example in which text sample is loaded into a spreadsheet.

Frame No.	Recording Date (Year)	Recording Date (Month)	Recording Date (Day)	Recording Date (Hour)	Recording Date (Minute)	Recording Date (Second)	Recording Date (Milli Second)	P1	P2	P3	P4	P5	Temperature Unit
1	2006	6	29	19	32	35	896	35.7					C
2	2006	6	29	19	32	35	928	35.4					C
3	2006	6	29	19	32	35	960	35.3					C
4	2006	6	29	19	32	35	992	35.5					C
5	2006	6	29	19	32	36	24	35.3					C
6	2006	6	29	19	32	36	56	35.7					C
7	2006	6	29	19	32	36	88	35.8					C
8	2006	6	29	19	32	36	120	35.9					C
9	2006	6	29	19	32	36	152	33.9					C
10	2006	6	29	19	32	36	184	28					C
11	2006	6	29	19	32	36	216	27.1					C
12	2006	6	29	19	32	36	248	26.8					C

Please contact your dealer or Nippon Avionics for more information.

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